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GOD'S UNIVERSE.

IN old times men looked round upon the earth, seeing there the whole world, the kingdom over which the gods ruled, while in the heavens above they recognised the temple in which their gods abode and were enshrined. There is something strangely impressive in the thought of what earth and heaven must have been to men in those days. We talk of myths doubtingly and coldly, because we cannot readily place ourselves in the position of those who were moved to make myths. We cannot readily picture to our minds what they not only saw, but felt; what—if we consider their position aright—we see they could not help feeling. The grave business man is as unable to recall the fancies of his two-year-old childhood, and so interpret the feelings of his two-year-old child, as the more advanced races of man to-day to recall the feelings with which the child-man contemplated the mysteries of earth and sun and moon, and the yet more marvellous mystery of the star-strewn heavens. Our school children can at least verbally describe the globe of the earth; they can name the great distance separating us from the sun, and speak of his size and might and power; they can tell how Copernicus and Kepler and Newton explained the strangely seeming movements of the planets. But grown men in old times could not interpret aught they saw. To them the earth's renewal of life year after year was a standing mystery; the sun, as day by day he renewed his victory over the powers of darkness, yet day after day sunk to seeming death in the blood-stained western fields, was as a living, acting, and enduring being, a veritable giant power, rejoicing as a giant to run his course. The moon seemed of set purpose to bear sway over the skies of night, as month after month she returned to full midnight glory, and though she "nightly changed in her circling orb," waxing and waning in power, even in this her individuality and self-power seemed attested. She seemed to measure time for man, as if specially considering his wants. Even more strikingly did the planets, as they pursued

> Their wandering course, now high, now low, then hid,
> Progressive, retrograde, and standing still,

seem to exercise powerful sway over the destinies of men. It was not merely, as Wordsworth sang, that those "radiant Mercuries"

> Seemed to move,
> Carrying through ether, in perpetual round,
> Decrees and resolutions of the gods,

but that they seemed to be themselves veritable gods. Men watched the movements of those divine beings even as children in Catholic churches watch the entrances and the exits of mitred bishops, robed priests, and surpliced acolytes, recognising in each a solemn religious meaning, though not knowing what their movements and ministrations may precisely signify. They had no need in those days, so far as worship was concerned, of "temples made with hands," for the arched dome of heaven, alike by day and by night, was their temple, the sun and moon, the stars and planets, were their gods. But that they might note with due precision the positions and movements of these ruling powers, they required earthly structures, and those structures, thus raised to watch the movements of their gods, became sacred: their pyramids and towers were like lady-chapels within a vast cathedral, their gnomons and obelisks were as altars or other essential adjuncts of their Sabaistic temples.

Turn without passing through all the intermediate stages of men's progress, at once from the simple adoration of those older times, when men prostrated themselves bodily before the orbs of heaven, to the teachings of modern science, and it might seem that men had become on the one hand altogether wiser, on the other altogether less reverent. Think what the earth is to us now in its lessons of a vast antiquity of ever-changing aspect, of ever-varying forms of life! Consider the infinite depth and solemnity of the tones in which the heavenly orbs speak to man to-day! We are then disposed to smile at the simple, the almost touching ignorance of mankind, during the childhood of their race. Yet, even as the grown man looks back with something of regret upon the fond hopes of youth, and even on the foolish fancies of boyhood and the illusions of infancy, so might the profoundest student of to-day be led to envy former ages their simpler faith, did he not recognise that the universe as we see it to-day, rightly understood, presents a grander and more enduring temple for men, a more wonderful power for their worship than the men of old times could even have imagined.

Consider the steps by which men passed from their former contented ignorance to their present growing, but ever unsatisfied, thirst for knowledge—noting at every step how the unknown and unexplained seemed ever to be the place of Deity, but that while the unknown was ever passing into the domain of the known and the unexplained into the domain of the understood, men's recognition of the immensity of the unknowable, the infinity of the inexplicable, has been ever growing clearer and more defined—so that whereas once men saw a temple in the skies and deities in the orbs of heaven, the universe itself is now recognised as the temple of the godhead, the power working in and through all things as Almighty Omnipresent—aye, and *Ever-manifest*—Deity.

First came the recognition that our earth is a globe, and the measurement of that globe's size. The nations of old times had doubtless come to recognise the earth as occupying a large space, for they knew that long distances separated Babylon from Egypt, and either from India, and so forth. None of the earlier nations can have doubted that the earth's surface must be measured by millions of square miles, or the equivalent of such spaces in their modes of measurement. Still, the surface they had imagined as belonging to the earth was almost as nothing compared with the 200 millions of square miles which they recognised as forming the surface of the entire globe, even when they had measured but small arcs of it, and surveyed but a minute portion even of the regions known to them. Then the recognition of the fact that this globe-shaped home of the human race is suspended, as it were, in mid space, even if it be considered (as by them it was considered) to be the fixed centre of the universe, must have had an impressive effect on the minds of thinking men.

Still all this was as nothing compared with the significance of the demonstration by Copernicus that the earth and the planets form one family, the sun being the centre about which they all travel. Because, so soon as this had been

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accomplished, it became possible to form a clear idea of the relative distances and even some idea of the actual distances of the other planets, and thus to form adequate ideas of the relative importance of those orbs as compared among themselves, and even as compared with the earth. The addition to the universe of five other worlds, probably at least as large (on the average) as the earth, was assuredly a most striking achievement. No wonder if the more narrow-minded among religionists, unable to reconcile such a discovery with the limited ideas they had formed of the might and wisdom of the Deity, shuddered with horror at the daring of the Copernicans in imagining (nay, in even venturing to prove), that there may be other worlds than ours.

Even this, however, was in turn but nothing when compared with the discovery of the real meaning of the stars, following almost immediately on the recognition of the real nature of the planets. Tycho Brahe, who was moved with something like indignation against the doctrines of Copernicus, pointed out at once that if they were true every star must be an orb of enormous size and splendour, perhaps comparable even with the sun, which he regarded as preposterous. For, said he, our earth could not circuit in this immense orbit which the fond Copernicans assign to her, without causing the constellations to change entirely in aspect in the course of each year. In autumn or winter, for instance, we look at the constellation Orion from a position many millions of miles away from that which we occupy when we look at that constellation in spring. Hence the star groupings would present an entirely altered appearance, unless we are to imagine that such a distance as 100,000,000 of miles (the real distance is 186,000,000 of miles, but Tycho Brahe did not know that) counts for nothing as compared with the distances of the stars. But if so, if they really lie at distances which must be measured by thousands of millions of miles, we need only remember that our sun removed to such distances would look no larger than a star, to see that we must regard the stars, manifestly self-luminous as they are, as veritable suns, if this pernicious Copernican theory is admitted.

When Kepler and Newton had established the Copernican theory on altogether irrefragable evidence, and when the telescope enabled men to measure the planets, still grander ideas about the universe began to force their way into men's minds. It was seen that Jupiter and Saturn are very much larger than the earth, and are the centres of systems of subordinate worlds. With increasing accuracy in the estimates of the sun's distance, it was seen that all the planets are farther off, and therefore larger than had been supposed. It became, in fine, certain that the earth is not the chief member of the family of worlds attending upon the sun.

But this was nothing compared with the amazing significance of the self-same telescopic teachings in regard to the stars. Not only did every increase in the estimate of the sun's distance increase in corresponding degree men's estimate of the stars' distances, but every increase in the power of estimating position made clearer and clearer the apparent fixity of the stars, and therefore threw them, as it were, farther and farther back into the abysses of space. It had been wonderful enough that the eye could detect no relative displacements among the stars as the earth circled in her wide orbit around the sun. But it presently became clear that, even with the immense increase in the power of determining positions which the telescope gave to astronomers, no sign of change could be detected during the year in the position of any star. Bradley attacked the problem, but though he worked so well that he was able to detect the annual change due to the aberration of light and the nutation (or nodding motion) of the earth's axis, he discovered no annual displacement. The best astronomers in Great Britain and on the Continent attempted the task and failed. At length astronomers gave up hope, beginning to regard the stars as, all and severally, too far removed to afford appreciable evidence of displacement as the earth revolved in her wide orbit around the sun.

But just when success was despaired of, a double success was secured. Henderson, at the Cape of Good Hope, recognised the measurable annual displacement of the bright star Alpha Centauri; while Bessel, at Konigsberg, recognised a smaller yet measurable displacement of the faint star (barely visible to the naked eye) numbered 61 in the constellation of the Swan. (Bessel had chosen this faint star for observation because it is moving much more rapidly on the star sphere than its fellows, as if it were relatively near the earth, so that its motion, though not really greater than that of other stars, appeared greater through the effects of proximity.) But when at last the problem had been mastered, when for the first time the actual distances separating us from the stars, and the stars from each other, came to be recognised, how tremendous those distances were found to be! The nearest of all the stars in the heavens lies twenty millions of millions of miles from us, in such sort that light speeding with a velocity of 187,000 miles in a second takes more than three years in coming to us from that star. Our sun removed to the same distance would appear but as a star—nay, he would be a very much smaller star, in appearance, than that nearest of all our neighbouring suns.

But in the meantime, while one set of astronomical researches was showing astronomers the immensity of stellar distances and the sunlike character of every star, another set of researches had shown and was showing the vastness of the numbers of the suns within our galaxy. The thousands of suns visible to the naked eye had increased to hundreds of thousands in the days even of Galileo. Another century had shown astronomers that the stars within telescopic range must be counted by millions. Sir William Herschel's gauges of the star depths had shown that our estimate of the numbers of the stars must run into tens and even hundreds of millions. And to-day, it is well known that if the most powerful of the telescopes made by man could be used in surveying every portion of the heavens, the total number of stars which would be brought into view would far exceed one thousand millions. The increase with each increase of telescopic power has, moreover, taught the lesson that we can in no sense limit our estimate of the number of stars by the number which even our most powerful telescopes would show. If we could double the space-penetrating power of our telescopes, we should probably much more than double, we should increase manifold, the number of stars—that is, of suns—which would be brought within our ken. Not thousands of millions, but probably millions of millions of suns exist within the limits of the sidereal system. Rather—I ought to say—they exist within the limits of our sidereal system, for doubtless this system is no more to be regarded as single within the universe than our solar system is unique within the star depths. Every star tells us of a sun, and probably of a solar system, in such sort that we must recognise thousands of millions of solar systems in the galaxy. May we not fairly assume, then, that in like manner our sidereal system is repeated millions of millions of times within some system of a higher order. That system may be in turn repeated many millions of times within a system of a higher order. And so on, to higher and higher orders, absolutely without end.

Recognising this as the teaching of the astronomy of to-

day, and noting how great to us appears the earth itself, though she is but the first step in an evergrowing series, each successive term of which enormously surpasses the preceding, we cannot but perceive that it is infinity, not mere vastness with which we have to deal: "End is there none to the universe of God; lo, also, there is no beginning."

SHAKESPEARE SELF-DRAWN.

By Benvolio.

I.—"TITUS ANDRONICUS."

LEAST attractive of all the Shakespearean plays, in certain passages absolutely repulsive, "Titus Andronicus" is yet in many respects most interesting to the Shakespearean student. When as yet little had been done towards classifying Shakespeare's plays in the probable order of their production, it was natural that this play should simply be rejected as not Shakespeare's work at all, save, perhaps, that a passage here or there might be regarded as thrown in by his master hand. It was obvious that the author of "Macbeth," "Othello," and "King Lear," whose method of treating tragic horrors is so powerful, cannot have been also the author of the crude horrors, the repulsive yet weak and almost ludicrous sensationalism of "Titus Andronicus." And that remains obvious still. But Shakespeare in 1587-89 was not Shakespeare the author of "Hamlet," "Julius Cæsar," "Macbeth," and "Coriolanus." He was a young man, country bred, imperfectly educated, associated with dramatists and actors of greater knowledge and experience, one in whom the audacity of youthful genius was tempered indeed, but not by his own judgment but by deference to the judgment of men really his inferiors, whom he then naturally regarded as his superiors. Moreover, it must be remembered, that even if Shakespeare himself, as a very young man (from twenty-three to twenty-five) had been able, against the judgment of experienced actors, to decide that plays like Kyd's "Spanish Tragedy," and the other bloody tragedies which had been in vogue for years before he came to London, were coarse and repulsive, he would still have been disposed to believe that such tragedies, nevertheless, must be purveyed for audiences whose tastes probably were as coarse as those of the modern audiences at the Victoria Theatre and (till lately) of the Surrey Theatre. It is certain that Shakespeare, even far later in his career as a dramatist, wrote for the groundlings as well as for the more cultured among his audiences; it is certain also, that, until late in that career, he regarded play-writing as belonging to an inferior order of literary work. We can hardly suppose that Shakespeare failed to recognise later the value of his plays as poetry; but he had probably written a dozen plays before the time when he would have set any of them on the same level with his "Lucrece," or even with his "Venus and Adonis." Thus, in considering Shakespeare's part in the production of "Titus Andronicus," the earliest of all his plays, we are free to admit much which we should at once reject if the play belonged to a later date; while, in the case of offensive, even repulsive passages, which we may thus either attribute to Shakespeare's pen or regard as having passed his scrutiny uncondemned, we may recognise rather the modesty of his youthful mind, accepting what his elders approved, and even writing in the style which seemed to them good, than absolutely coarse tastes even at the time when he was little more than a half-educated country lad.

Shakespeare's connection with "Titus Andronicus" is much more clearly made out than his authorship of many of the plays which bear his name. The play is one of six tragedies mentioned by Meres (*Palladis Tamia*, Wit's Treasury) in 1598, as proving Shakespeare's excellence; and it must be remembered that the association of Shakespeare's name with a play in the days when as yet his fame was not established on the firm footing which it afterwards had, is much more decisive of the question of authorship than similar evidence would be in after years when Shakespeare was the acknowledged leader among the dramatists of his age. We can understand how Fletcher's name came to be dropped from the title-leaf of "Henry VIII.," of which Fletcher certainly wrote more than half; but had not Shakespeare written much more than the half of "Titus Andronicus," his name would certainly not have been associated with it when it appeared (perhaps 1589) or for many years after.

Even if we had to accept the whole play as Shakespeare's (which, fortunately, is forbidden by external and internal evidence alike) we should find scarcely a greater contrast between "Titus Andronicus" and "King Lear" (the later tragedy to which it is nearest akin), than there is between "Love's Labour's Lost," the earliest comedy, and "Twelfth Night," Shakespeare's finished work. As much of the falsely heroic as there is in "Titus Andronicus," so much at least is there of false humour in "Love's Labour's Lost."

It has been remarked by a laborious Shakespearean student respecting "Titus Andronicus," that it would be unsafe to attempt to point out certain passages as Shakespeare's, because we do not know the distinguishing features of his style when he first began to write for the stage. To my mind this remark suggests small critical acumen. It would be unsafe to point out certain passages as not Shakespeare's, and for the reason indicated, that we do not know what characteristics distinguished the Shakespeare of the time when "Titus Andronicus" appeared. But this need by no means prevent us from recognising passages as undoubtedly Shakespearean which present characteristics such as his work, and his alone, has displayed.

Viewing "Titus Andronicus" thus, the student who has entered into Shakespeare's mind and character, and has learned to know the ring of his music, will, I believe, recognise much more of "Titus Andronicus" as certainly Shakespeare's than critics of the Furnivall school imagine; while he will be disposed to reject as not Shakespearean much less than he would were the play to be dealt with as belonging to the prime of Shakespeare's dramatic career.

Nearly the whole of the first scene is Shakespearean in tone. In particular the description by Marcus Andronicus of his brother's services to Rome, all but the first few lines is manifestly from the same hand, as yet, however, unpractised, which later wrote Coriolanus's speech, beginning "Hail, lords! I am returned your soldier." Compare with this also the speech of Titus himself in scene ii.:—

> Hail Rome, victorious in thy mourning weeds!
> Lo, as the bark, that hath discharged her fraught,
> Returns with precious lading to the bay
> From whence at first she weighed her anchorage,
> Cometh Andronicus, bound with laurel boughs,
> To re-salute his country with his tears.

If in this speech and much which follows in scene ii. we recognise the "'prentis han'," that hand is still manifestly the hand of Shakespeare. Even in the schoolboy Latin introduced here and elsewhere throughout this crudely concocted tragedy, we may find something Shakespearean, ay, and something throwing light on Shakespeare's character in

boyhood and youth. We have a touch also of Shakespeare's own self in the lines :—

> Wilt thou draw near the nature of the gods?
> Draw near them, then, in being merciful;
> Sweet mercy is nobility's true badge.

The touch is all the truer that it is dramatically inappropriate. When Portia speaks of mercy as "an attribute to God himself," as "mightiest in the mighty," and as befitting "the throned monarch better than his crown," we feel that it is Portia who speaks; and, though we need not therefore regard the passage as wholly without significance respecting Shakespeare's own nature, we have yet in the dramatic fitness of the sentiments a sufficient explanation independently of Shakespeare's personal character. But when Tamora speaks so nobly of mercy, ignoble of nature, and cruel as she was, our sense of the dramatic impropriety of the sentiment in her mouth enables us the more confidently to regard that sentiment as coming from Shakespeare's own heart. Tamora might have begged abjectly for mercy; but she could no more have pleaded with such earnestness of reasoning than Portia, most intellectually gifted of all Shakespeare's women, could have pleaded with Shylock to be merciful only out of pity.

Later in scene ii. we come in all probability on the material of the original play, which Shakespeare can only have left in despite of his better judgment. The murder of Mutius by Titus would be repulsive were not the passage made utterly ridiculous by the coolness with which Titus, Lucius, Martius, and the rest treat the whole affair. If Shakespeare kept this play, as it remained after his rewriting and revision, and later looked it over, how his developed dramatic taste must have been at once offended and amused by the remark of Lucius as he enters on hearing his brother's dying cry :—

> My lord, you are unjust; and, more than so,
> In wrongful quarrel you have slain your son! *

In the beginning of act 2 four lines occur which no one but Shakespeare could have written—at least, as lines in a play dating so far back as 1589. I refer to the description of sunrise :—

> As when the golden sun salutes the morn
> And having gilt the ocean with his beams
> Gallops the zodiac in his glistering coach,
> And overlooks the highest-peering hills.

I do not remember, by the way, the use of the word "peer" in the sense here given to it by any of Shakespeare's dramatic contemporaries. Shakespeare himself uses it in a kindred sense in "Henry V.," where Henry, speaking of the French "horsemen on yon hill," says :—

> . . . yet a many of your horsemen peer.

Further on in act 2, in the passage which introduces the repulsive lusts of Demetrius and Chiron, we find lines which are remarkable as being the only passage repeated (in effect) thrice over in Shakespeare's works. She is a woman, says Demetrius of Lavinia :—

> She is a woman, therefore may be woo'd;
> She is a woman, therefore may be won;
> She is Lavinia, therefore must be lov'd.

In the first part of "Henry VI.," in a scene unmistakably from Shakespeare's hand, Suffolk says of Margaret :—

> She's beautiful, and therefore to be woo'd;
> She is a woman, therefore to be won.

And if any doubt could remain that these are Shakespeare's words, it is removed when we note that his 41st sonnet has the lines :—

> Beauteous thou art, therefore to be assail'd;
> Gentle thou art, and therefore to be won.

The thought here conveyed, and the form in which the thought is presented, must have had a singular charm for Shakespeare, that he (who so seldom repeats himself) thus frequently repeats this idea in almost the same words.

I know of no passage more truly Shakespearean in "Titus Andronicus" than the forest scene, as described (inappropriately enough) by Tamora, that "unhallowed dam," addressing the ravenous tiger and accursèd devil," Aaron the Moor :—

> My lovely Aaron, wherefore look'st thou sad,
> When everything doth make a gleeful boast?
> The birds chant melody on every bush;
> The snake lies rolled * in the cheerful sun;
> The green leaves quiver with the cooling wind,
> And make a checker'd shadow on the ground;
> Under their sweet shade, Aaron, let us sit,
> And whilst the babbling echo mocks the hounds,
> Replying shrilly to the well-tun'd horns,
> As if a double hunt were heard at once,
> Let us sit down and mark their yelping noise,
> And after conflict, such as was suppos'd
> The wandering prince and Dido once enjoy'd,
> When with a happy storm they were surpris'd,
> And curtain'd with a counsel-keeping cave,
> We may, each wreathèd in the other's arms,
> Our pastimes done, possess a golden slumber;
> While hounds, and horns, and sweet melodious birds,
> Be unto us, as is a nurse's song
> Of lullaby to bring her babe asleep.

One might imagine this addressed by Venus to Adonis; one might imagine it part of a poem written by Shakespeare on the theme of his "Venus and Adonis," but in another strain; one may even imagine in it a picture of fair but forward Anne Hathaway pleading with her youthful love; but while one can see no fitness in words such as these placed in the mouth of the fiendish Tamora, one cannot imagine that any penned them but Shakespeare. The style is his, the thoughts are his, the words are his; but, beyond and above all, the music is his, and none other's.

Repulsive as is the rest of this scene, no one, I think, who compares the appeal of Lucretia to Tarquin in Shakespeare's "Lucrece" with the appeal of Lavinia to Tamora and her sons, can doubt that the former is not more certainly Shakespeare's work than the latter. The scene is one on which no reader cares to dwell, even to note what is beautiful amid so much that is horrible, Yet what could be more pathetic than Lavinia's appeal?—

> Some say that ravens foster forlorn children,
> The whilst their own birds famish in their nests:
> O, be to me, though thy hard heart say no,
> Nothing so kind, but something pitiful.

Scattered throughout "Titus Andronicus" we find many expressions and tones characteristically Shakespearean. Compare, for instance—

> *Martius.* To prove thou hast a true-divining heart,

with

> *Juliet.* Oh God! I have an ill-divining soul;

and

> *Demetrius.* I would we had a thousand Roman dames
> At such a bay,

with the lines—

> Ah! that I had my lady at this bay,†
> To kiss and clip me till I run away,

* Yet even this, regarded as due to mere carelessness, is matched by Imogen's coolness when Guiderius, whom she had loved as a brother (not knowing that he actually was her brother) has been condemned to death. "Thou art dead," says Cymbeline to Guiderius; and Imogen is only moved to remark that she has mistaken the man whom Guiderius had killed for her husband.—*Cymbeline*, last scene.

* Probably a misprint for "coiled," a word which might be so written as to be mistaken for "rolled."

† The word "bay" is here used in the hunter's sense, as again in Titus's speech at the beginning of scene 2, act ii., "Uncouple

(in the fourth of the poems—some undoubtedly not by Shakespeare, but this one certainly from his pen—included under the strange heading "The Passionate Pilgrim"); and again—

Aaron. Here's a young lad, fram'd of another leer,

with Celia's, "he hath a Rosalind of a better leer than you."

"Titus Andronicus" is well worth studying for the many truly Shakespearean beauties it contains, if only one can overcome the sense of disgust which several scenes in the play tend to inspire. Once recognised as in the main Shakespeare's work, it is suggestive as to his character in youth, and as to the development of his poetic and dramatic instincts. Apart from direct suggestions of this sort, there is something singularly suggestive of Shakespeare's modesty at this part of his career, in his adhesion for the time to the older tragic style, which even then he must have recognised as distasteful, if not repulsive.

HAVE GHOSTS BEEN SEEN?*

EW subjects tax more stringently what may be called the scientific conscience than the matter of apparitions.

The student of science recognises two clear duties in all scientific inquiries. In the first place, he must strive to see things as they are; and in the second, he must speak of them as he sees them. Against strict obedience to the first duty prejudices of all sorts, shapes, and sizes often oppose themselves; but when he has resisted the temptations thus soliciting him to careless or sceptical or unfair inquiry, he is often still harder beset by the temptation to conceal views that he thinks may injure him either among fellow-workers in science or in the lay world.

In regard to ghosts and goblins, science has travelled along smoothly enough so long as apparitions of particular classes have been in question. The whole subject of hallucinations has been explored by science so thoroughly that no one now is perplexed by stories of visions such as those that troubled Nicolai, Blake the painter, Mrs. A. (of Brewster's "Natural Magic"), and a number of other persons. The vision in such cases is but "the blot upon the brain that *will* show itself without," and science is "not to be overawed by what it cannot but know is a juggle born of the brain."

Nor has science been much concerned about those old-fashioned ghost stories, telling how sheeted forms and unearthly sounds have affrighted sensitive folk under conditions suitably suggestive. We have learned to understand how readily under such conditions as the gloom of night, chilly air (starting shivers and tremors, which of themselves suggest unearthly feelings), and so forth, the mind will unconsciously form false images out of dimly seen objects, or transform unexplained noises into sounds significant of horror. A waving cloth becomes a beckoning sheet-clad ghost; the creaking of a door sounds like the shriek or moan of some one in agony. Out in the open air, in gloomy woods, or valleys half hid in mist, sights and sounds that by day would not be noticed are by the active mind changed to awful appearances or terrible noises.

To this day, for instance, in parts of England, the noises made at night by migrating birds are regarded as the barking and yelping of the Gabriel hounds ("Gabriel" is itself a suggestive transformation from "gabble"), which in recent times—I mean somewhere within the last ten or twelve centuries—have been found by the foolish country folk to be the souls of unbaptised children; while (since the hounds have never done any harm directly) it has been held reasonable to regard them as indicating some approaching trouble for those who may hear them.

There has not only been no trouble in interpreting the ghosts and goblins of this type, but no difficulty has arisen in consequence of visions and voices which have seemed to simulate the appearance or tones of the dead. Here the argument from coincidence, rather too freely urged about apparitions in general, may be safely used. Undoubtedly fancies of the kind described are so numerous, that we may fairly expect some among them to correspond (in the manner characteristic of ghost stories) with the supposed return of the spirit of the dead to his earthly home. Especially is this the case when we remember how such fancies are influenced by predominant ideas, and how, therefore, a person whose mind is full of the thought of some dear lost one would be more apt to form a mental picture of the dead friend or relative than of some form or face entirely unfamiliar.

Even where several persons have seen, or seemed to see, one and the same vision, science is at no loss to explain the illusion, because it is well known that the thought of one mind is suggested readily in such cases to another mind liable to similar impressions. Consider, for instance, the well-known story of the widower, who thought he saw in the dusk of evening the form of his late wife (only recently deceased) sitting in a garden chair; he called one of his daughters, and asked in awe-struck tones whom she saw sitting there? And the daughter saw her mother. Another daughter being called was similarly impressed with the thought that her mother sat in the chair which in life she had been wont to occupy; but when, summoning up his resolution, he went forth into the garden to speak to his "late departed saint," lo! he found not her in her habit as she lived, but her garden dress, which a maid had placed over the seat. It is obvious that the thoughts filling the mind of the father transformed a dress into an apparition, and it is probable that this thought was conveyed from his mind to his daughters', rather than suggested independently to them. In any case, there was no real apparition.

It is when we turn to visions of living persons, or to thoughts and suggestions relating to living persons, at a distance from the person affected by the vision or impression, that we find evidence most difficult to deal with, and the results not only difficult to explain, but not altogether satisfactory for discussion, because the number of those who welcome the discussion of all such matters, either with credulity or with ridicule, enormously exceeds the number of the more thoughtful.

The following is one of the best authenticated of a class of stories whose name is now becoming legion:—

In September 1857 Captain W., of the 6th Dragoon Guards, left England to join his regiment in India, leaving his wife at Cambridge. On the night between November 14 and 15, 1857, she dreamed that she saw her husband looking very ill, and she thereupon woke in great agitation. When she looked up she saw the same figure standing by her bedside. He appeared in uniform, and as if suffering intense pain. He then gradually faded from her view. At first Mrs. W. supposed she must still be asleep; but rubbing her eyes and listening to the breathing of a child beside her, she convinced herself that what she had seen was no dream. In December 1857 a telegram from the seat of war

here and let us make a bay." Shakespeare's love of hunting comes out most markedly in his earlier plays and poems, as in "Titus Andronicus," "Love's Labour's Lost," "Midsummer Night's Dream," and "Venus and Adonis."

* From the *Cosmopolitan*, a leading American monthly magazine.

appeared in the morning papers, stating that Captain W. had been killed before Lucknow on the *fifteenth* of November. The family solicitor applied for further information as to the date of Captain W.'s death, which Mrs. W. felt sure must have taken place on the *fourteenth*, and not on the *fifteenth*. But the date given in the telegram was confirmed at the War Office. At this time a singular circumstance came to light. The solicitor chanced to mention the case to a lady, a friend of his, who, according to his account, had a tendency to see visions. Turning to her husband, she said, "That must have been the same apparition I saw on the evening when we were speaking about India." They were able to fix the date, by means of a receipt for an amount paid that day, as the *fourteenth* of November. The solicitor on this applied to the War Office again, saying that the friends of Captain W. were persuaded there must be some mistake about the date. The officials stated, however, that there could be no mistake, since the death was referred to in two despatches from Sir Colin Campbell, who in both cases gave the date as the *fifteenth*. In March 1858 a letter arrived from a brother-officer, giving an account of Captain W.'s death. This officer, who had been riding beside Captain W. when he was killed, stated that death occurred on the *fourteenth* of November. Finally —though whether on the strength of this officer's evidence or through faith in the apparition's truth to time—the date was altered to the *fourteenth*.

It seems never to have occurred to any one to consider the difference between Indian and English time. If the time of Captain W.'s death really coincided, as Mrs. W. then and thereafter firmly believed, with the time of her dream, then, unless she went to bed unusually early, he was killed on November 15, Indian time. Suppose, for instance, she had her dream at ten o'clock on the night of November 14, then at that moment it was twenty-four minutes past three on the morning of November 15 at Lucknow. Supposing it was later, as the account suggests, then we may well suppose that daylight had already broken on the morning of the 15th at Lucknow, at the hour when Mrs. W. had her midnight dream at Cambridge and her husband met with his death.

One other narrative, before we consider the philosophical aspect of the multitudinous stories of this kind which are vouched for on good authority; and be it remembered, in passing, such stories as these can be unmistakably confirmed, and have frequently been so confirmed, independently of the veracity of the persons who assert that they saw the vision or experienced the impression considered. The following story is related almost in the words of the Bishop of Carlisle, better known in former days at Cambridge as Dr. Harvey Goodwin, the eminent mathematician :—

A Cambridge student had arranged, some years ago, with a fellow-student that they should meet together at Cambridge for the purpose of reading. A short time before going up to Cambridge to keep his appointment, one of them—from whom Dr. Goodwin had the story—was in the south of England. Waking in the night, he saw, as he imagined, his friend sitting at the foot of his bed. He was surprised by the sight, the more so as his friend seemed to be dripping with water. He spoke, but the apparition shook its head, and presently disappeared. But the vision reappeared a few minutes after. Information was soon received that at about the time when the apparition was seen by the young student his friend had been drowned while bathing.

It will be remembered that Lord Brougham had an experience very similar to the one just related; and there are other cases of the same kind—that is, cases in which an apparition of a distant friend, at or near the hour of death, has been seen by one to whom a promise had been made, the fulfilment of which had been prevented by death.

It must be admitted that, as the Bishop of Carlisle has said, the evidence in regard to apparitions of this sort is such as would be regarded as decisive in any matter of independent scientific research. The *à posteriori* evidence, in fact, considered alone, would be regarded as conclusive: it is only because of the strong *à priori* unlikelihood, amounting with many to the impossibility that such influences from a distance can be exerted under any conditions, that the student of science finds the force of the evidence weakening, not indeed absolutely but relatively, until he is almost ready to reject it as worthless, simply because of the inexplicable nature of the conclusion to which it points. This, however, no student of science—that is, of the known and the knowable—can honestly do. He must weigh the evidence in every case for what it is worth, quite independently not only of prejudices, but also of preconceived opinions as to the possible and the impossible.

After all, if *à priori* considerations are to guide us, we must remember the antecedent improbability that stories of this sort should be invented or should suggest themselves, even to the most imaginative minds. We can understand the origin of ordinary ghost stories, both those suggested by illusion and those resulting from imposture; but those stories of influences apparently exerted on persons at a distance, when either life is passing away or the vital powers are intensely affected by emotion, are by no means such as would naturally suggest themselves either to the fanciful or the inventive.

The coincidence explanation, which disposes fully of even the best-authenticated ghost and goblin stories, fails entirely in the presence of the phenomena we are considering. Professor De Morgan, a master of logic, long since pointed out its absurdity as thus applied. Among the multitudinous sights and sounds that, under favouring conditions, may be mistaken for apparitions and their utterances, a considerable number is bound to be strongly deceptive (the human mind being what it is), and there cannot but be some that seem to escape all explanation. But the special characteristic of the influences and appearances we are considering here is that they are so unusual as to convince the persons affected that something of a dreadful or most impressive nature has affected a dear friend or relative, and they are almost always, if not invariably, confirmed by the event.

If spectral appearances of the kind described were common, it might, of course, be justly reasoned that among such appearances some might be expected to correspond in time and circumstances (as in the case of the dripping spectre of the drowning man) with the death of the particular relative or friend seen, or in whom the person affected is most specially interested. But this is not the case. These experiences are so exceptional as to excite special attention when they occur; while, whenever they do occur, an event of a special kind occurs to correspond, both as to time and person. This being the case, the argument from coincidence, logically demonstrates causal, not casual connection.

But, as I suggested at the outset, the trouble is that we cannot understand how there can be any causal association in these cases. Nothing as yet known to the student of science enables him to explain how the anguish of A in one part of the earth can move B to sympathetic anguish in another.

I am utterly unable to suggest any explanation. The theory of brain-waves suggested by the present editor of the *Nineteenth Century* several years ago, in reference to a story related by Tennyson about an apparition of the kind we are considering, is simply no explanation at all. It is

an attempt to explain *obscurum per obscurius*. The only path to an explanation that seems worth trying is that on which Professor Barrett and others have attempted to advance inquiry—namely, as to the influence of mind on mind under test conditions. And unfortunately, while this path is infested by charlatanism and trickery, what has been thus far disclosed with more or less clearness in this direction has been of little promise. Like Sir Isaac Newton's experiments on the action of gravity under test conditions, which gave evidence only as to the nature of the attractive force exerted by matter on matter, but in no sense explained how matter can act on matter instantly over vast distances, so these experiments on the action of mind on mind within the same room, though useful as indicating the nature of this action, suggest no explanation whatsoever of the observed fact that mind can act on mind at a distance, and apparently in an instant of time.

In fine, it appears to me that the evidence regarding the communication of impressions from mind to mind over great distances, in such sort that apparitions of distant persons dying or suffering seem to be seen by their friends or relatives, is too strong to be rejected by any conscientious student of facts. Science is no more justified in rejecting this evidence merely because no explanation is available than astronomers would be justified in rejecting the observed fact that bodies influence other bodies from a distance, merely because, as Newton himself admitted, no one can explain how matter can act where it is not. Some communication there must be between sun and planet, between planet and satellite, and, beyond each solar system, between sun and sun and between galaxy and galaxy; but no one has yet shown what that communication may be. In like manner even the most cautious student of science may well believe that there may be some means of communication, under special conditions, between mind and mind at a distance, though no one may be able to explain how such communication is brought about.

VARIETIES OF AMERICAN LIFE.

AMERICANS are apt sometimes to be amused, and occasionally get rather angry, when they hear Englishmen who ought to know better blundering about American life, imagining semi-savage conditions in regions where culture prevails at least as fully as in the greater part of the old country, conceiving dangers from Indians where no Indians have lived for generations, and in general assuming that the wild ways of frontier regions continue in regions long since reduced to order and civilisation. I have been gravely asked whether it is not well always to be armed even in New York and Boston, whether in my Missouri home I felt safe from Indians outside the suburbs of St. Joseph, whether in my Florida home I am not in continual dread lest alligators should devour my children. And I have fancied that my answers have been doubted when I have replied that in all my time in America, from 1873 until now, I have never thought of carrying any weapon more effective than a pocket penknife (kept only for a penknife's work), that the nearest approach to an Indian I have seen within a hundred miles of St. Joseph has been an Indian negro half-breed working in my own stable, and very far from warlike in aspect, while in Florida I have only seen alligators when on board a launch or river steamer specially chartered for a trip, in which, if fortunate, an alligator or two might be caught sight of, lazily lying in some sequestered nook, and, even so, not safe from the hand of man.

But, although most of the ideas which untravelled Englishmen too commonly entertain respecting life in America, and especially in the far West, are absurdly remote from the truth, yet Americans are somewhat too apt to deny actually existent varieties of American life, which do unquestionably differ in marked degree from anything we have in the old country. An American fellow-passenger a few days ago (I write on February 1, and the conversation took place on January 24) so persistently claimed that no differences exist, that I took the first newspaper which came to my hands afterwards, viz., the *Chicago Tribune* for Sunday, January 25, and carefully noted all the paragraphs which indicated, as I think the English reader at least will perceive, the existence of varieties in American life for which in England, and for the most part in Europe itself, we have no counterparts.

I take these in the order in which I noted them:—

First. I read that at a meeting of Irish Volunteers, O'Donovan Rossa and Frank O'Byrne advised Irishmen to imitate the men who killed Cavendish and Burke, and to use dynamite. I do not read any expressions of abhorrence for the utterances of these shameless miscreants, or of disgust for the state of law in America which permits such utterances to be safely made in public. No nation has quite shaken off savagery in which such a thing is possible.

Secondly. I read news from Nogales, Arizona, of a fight in which the Federal troops, aided by a party of citizens ("most all the citizens" of the town where the fight took place "were engaged in it," says the paper ungrammatically), "whipped a band of Indians, killing three and wounding many, besides capturing five squaws and seven children.

Thirdly. At Amite City, Louisiana, a coloured man accused of an assault on a white girl, and lodged in gaol, is taken from the hands of the sheriff by a body of armed citizens (a highly respectable body we are assured, and we should imagine they must have been), and "hanged to a tree" a hundred yards from the gaol.

Fourthly. W. A. Pinkerton, of the Pinkerton detectives, captures a gang of train robbers who had "operated" in Arkansas and Texas. ("Operated" is good!) Among the multitudinous train robberies operated by this party one will strike Englishmen who are accustomed to attribute a certain degree of pluck to their kindred in America as remarkable, to say the least. A number of coloured men belonging to the United States army, officered by four white men, were on board a train attacked by three ruffian brothers named Burrows. Those gallant men, coloured and white, and a number of other passengers who were armed, allowed the thieves to rob the train undisturbed, and were themselves despoiled of their property and disarmed, their reason for this "calm, dishonorable, vile submission" being lest in the interchange of shots any of the women on board should be injured! Their rank cowardice might thus be extenuated, *possibly*, if the women had requested them to display it; but as a matter of fact several of the women on board expressed their indignation loudly. It is hardly necessary to say that train robbery, thus encouraged by the cowardice of passengers, remains a thriving business. I was travelling over the road where the robbery took place only a few days before; and so far as I can judge, if I had been one of the passengers, and cowardice had so far unnerved me that I could have joined those who advised passive submission on the part of four armed officers, a score of soldiers, and a hundred armed passengers, to three ruffians, I should have wished afterwards to be put carefully out of existence by some process such as my nerves (shown to be so weak) could comfortably bear—say laudanum. "Shamed life" must be a hateful thing to those four officers, at least.

Fifthly. A party of dunderpated Kentucky farmers arm

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themselves to resist the survey of their county, and at the last reports much anxiety was felt for the safety of the surveying party. The party of farmers might probably be spared without much loss to the State.

Sixthly—a quainter circumstance than the preceding—Spotted Eagle and Charger, the defeated Indian candidates as delegates to Washington, sulk in their tents because of the election of One Feather, White Swan, and Crow Eagle. "Great excitement exists," the *Tribune* adds, "and news from Sitting Bull and Red Cloud is anxiously looked for."

Seventhly. American train robbers, captured when trying to rob a Mexican train, are sentenced to life servitude in the mines, instead of being shot after the usual Mexican practice. Naturally Americans feel honoured by the distinction thus drawn between American and Mexican ruffians.

Eighthly. A man who attempted to shoot the prisoner in a trial in the court of Judge Clifford, Chicago, is set free; and, so far as the report shows, is regarded as a suitable object for condolence and admiration.

Ninthly. A prominent citizen of Kalamazoo, Mich., is arrested for arson. This citizen was not only old and wealthy, but prominently pious—always a suspicious feature in an American. In fact, he was arrested while in church. Investigation showed that he had poured oil on the roof of another prominent citizen, for whom he entertained a feeling of dislike, and set the oil on fire. He may perhaps have misinterpreted in some degree the parable of the Good Samaritan.

Tenthly. Marshal Brown, of Chattanooga, Tennessee, had arrested Mr. Taylor Bowlin, who seized an early opportunity to call at Brown's place of business with the pleasing idea of shooting him. But the wary Brown "got the drop on" Bowlin, and, shooting him through the head, caused his death!

Eleventhly. In a row near Morehead, Rowan County, Kentucky, three men were seriously wounded. James Martin unwisely attempted to kiss Mrs. Walker, the hostess, which "she resented fiercely." In the *mêlée* (the reporter deems it quite unnecessary, it would seem, to explain just how the fierce resentment of Mrs. Walker developed into what Mr. Green usually calls a "melly") the lamps were overturned, and in the darkness several shots were fired. When a light was made, John Walker was found to be shot through the left lung, Pet Williams through the neck, and Ned Lawler through the abdomen. James Martin and Mrs. Walker do not seem to have been wounded. The paper simply heads the account "Lively Times."

Twelfthly. In the same county, a negro, Bob Yenders, suspected of an outrage, is visited by a party of the chivalrously dunderpated farmers who inhabit that region, and hanged to the beam above his door. But news being received just as Yenders was in the throes of death that one John Hooper was guilty, the wise farmers cut Yenders down—whether dead or alive the reporter does not think it worth while to mention. Any one who has had the opportunity of meeting some of the wiseacres who people this Bœotia of America need hardly be assured that not one of these murderously-minded farmers had the least idea that his conduct was wrong. Their compound of ruffianism and idiocy is regarded by many even of the better parts of the community as chivalrous. The so-called chivalry of the South is a strange blend.

Thirteenthly. From Indianapolis comes the news that the Democratic leaders of Indianapolis and of the State of Indiana feel strong sympathy for two men convicted of forging voting papers, and intend to stand by them! Such little foibles as forgery are regarded by many as mere indications of party zeal.

Fourteenthly. In Knoxville, Tennessee, three men accost Mr. Jas. F. Rule, the editor of the Knoxville *Journal*, with whose paper they were not content, and though he is accompanied by his wife, they invite him to the opposite side of the street, proposing there to assault and shoot him. "But i' faith he had been wiser than they"—for he had not only taken a pistol to church, but was ready to use it more quickly than they were prepared for. The result of this little Sunday scrimmage was that, although Mr. Rule was wounded, he was not badly hurt, whereas one of his three opponents was carried away in a dying state, and another was badly wounded. It suggests a curious picture of Knoxville Sundays to read that "the organ drowned the noise of the pistol-shots."

Fifteenthly. A woman of San Francisco, who had, for reasons unexplained, been known as "Dolly Adams," having died in China, a glowing account is given of her career, the most original feature of which was her marrying a high Chinese official, from whom she obtained a promise that if she died in China he would have her remains restored to San Francisco. "A few days ago, the body of the 'Water Queen'"—for so, as well as "Dolly Adams," this erst naughty lady was called—"was brought to San Francisco encased in a costly casket. But when we consider some of the ornaments of our national portrait gallery, we cannot find much fault with the treatment of celebrated *demi-mondaines* in the American press.

Sixteenthly. In Milltown, Indiana, a secret society of citizens (of course they are "highly respectable citizens") has undertaken the correction of social errors, such as San Francisco seems, on the contrary, rather to encourage. The members of the society call on a man who has not behaved quite fairly to his wife, and, tying him to a tree, give him "fifty lashes of hickory" (*sic.*) They then call on his neighbours and compel them to spread the news, on pain of being similarly treated.

Seventeenthly. And lastly (though from this one paper alone I could have taken a score more of such details), Collector Magone, of New York, dissatisfied with the immigrants brought in German steamships, sends a number of them back. Judging from some of the preceding cases, it would seem as though the stable-door were being carefully closed after the very undesirable intruders had driven the good steed away.

MORALS OF NOBILITY.*

By Grace Greenwood.

[THE following article by a leading and graceful American authoress presents a fair and interesting (in some respects a rather amusing) idea of the way in which English royalty and nobility are regarded in the United States by the less uncompromising Republican minds.]

During a golden autumn day, spent with some friends at Highgate, that most charming suburb of London, we were taken to see the quaint old place bestowed by Charles II. on his favourite of favourites, Nell Gwynn. It has suffered strange mutations since Nell's time, not the least strange being that it now has for a mistress a fair American, the young wife of Sir Sydney Waterlow. But Lady Waterlow does not dwell in the halls or wander through the grounds which once rang with the light laughter and lighter songs of the ex-orange girl, ex-actress, her royal lover, and his roystering companions. Ah, no! for the house has fallen

* From the St. Louis *Globe-Democrat*.

into dismal decay, while the grounds have, through years of neglect, become a tangle and labyrinth of shrubs and vines, like to the magic-guarded gardens of the Sleeping Beauty. Indeed, so rank is the growth of untended flowers, fast relapsing into primitive barbarism, so insolent the spread of weeds, so still and slumberous the atmosphere of this enchanted bit of the past, standing at bay against the mighty roar of the fast-advancing town, that one could easily fancy Nell yet in her quaint bedchamber, sunk in her prolonged beauty-sleep, but, perhaps, just ready to wake, take a bath in her shallow marble tub, array herself in rich stuffs and colours, just come again into fashion after two centuries, and start out on a new career of conquest. The court proper, or the proper court, would not receive her, nor even the demi-court of the heir-apparent, openly; but the stage would be more than ever open to her. She would probably come to

> the West,
> To dazzle when the sun is down,
> And rob the world of rest,

revel in Republican homage, and roll in "greenbacks," like to other pretty favourites of princes.

The Merry Monarch was very fond of this Highgate place —pleasant and cosy, but never luxurious—and with it is connected a significant little story. One morning, as Charles was strolling up and down the brick-paved terrace, with his usual bodyguard of little long-eared spaniels, Mistress Eleanor Gwynn appeared at her chamber window, holding in her white, dimpled arms a pretty baby, who much resembled the King—

> With the self-same eyes and hair.

More than once the proud mother had solicited for him a ducal title and estates to support it, but her liege had put her off, fearful of establishing a precedent which might stain the royal prerogative and exhaust the royal treasury. Now, looking down from the window, and holding forward the child, she cried, "A title, your Majesty, or out goes the brat!"

The indolent King was alarmed for his beautiful boy, and instantly exclaimed, "Save the Duke of St. Albans!"

Some of England's noblest titles and estates have had their origin in some such ignoble way, and date directly back to honours and rewards bestowed by profligate kings and princes on low-born courtesans and their "brats." The blue blood of Britain is not altogether cerulean, but has now and then a very earthly tinge. The scandals which so frequently disgrace the highest English society and shock the world are outbreaks of the cancerous corruption of past generations. Yet the royalty of to-day, not only of England, but of Continental kingdoms, is certainly more decent and decorous than that of less than a century ago—if it is not absolutely more virtuous. In England this improvement is, of course, largely due to the example of the "virtuousest, discreetest, best" of Queens. Her Uncle William had his palace well stocked with and his Civil List well burdened for his natural children; her Uncle George was, as all the world knows, the greatest of royal voluptuaries and libertines, and even her venerable grandpapa had in his youth his princely peccadillos. It is, perhaps, an open question whether the royal and ducal folk of old times, who handsomely provided for their mistresses and boldly acknowledged and ennobled their illegitimate children, were more immoral than those of our day, who conceal irregular relations and ignore their unhappy consequences; but about the honesty and manliness of the two courses there can be no question. It may be that the growing restiveness of that once stupid animal, the taxpayer, has something to do with the decrease of royal profligacy.

Seen under the white light of absolute morality, I cannot claim that the daily walk and conversation of the popular Prince of Wales presents a lofty example to high English society, yet I do not believe him the Don Giovanni or Sardanapalus he has been represented. He possesses too genial, kindly, and frank a nature and too much good sense to attempt a prince regent rôle; that is played out. And then he is too busy with bridge and park openings, and exhibition inauguratings; he is whirled from banquet to banquet, from chair to chair; he is waltzed through galleries, is called to wrestle with Albert monuments and statues and multitudinous busts. It seems to be the policy of the Queen and her advisers to keep the royal family "to the fore," to have not only the Prince of Wales, but all his brothers and sisters, nephews and nieces, act up to the "Ich dien" motto—serving the people in all proper ceremonial ways—and the people work them well. Last summer the three-year-old Duke of Albany actually laid the foundation of a public building, and did his "level best" with his little trowel to prove to British taxpayers that they were getting their money's worth out of the Guelphs.

Unquestionably the English royal family of to-day is an improvement on that with which the century opened. On the morals of the sons and daughters of George III. history is reticent, and will be during the life of the good Queen; but I am afraid that there was scarce a man or woman of the whole big family whose character should be discussed except *in camerâ*. Albert Edward is like to the long run of Princes of Wales since Edward, born at Carnarvon; there has probably not been a Joseph among them; but no great scandal has attached to the lives of the Queen's other sons. The Duke of Edinburgh is said to be too parsimonious to be profligate, while the Duke of Connaught is too domestic —too like his father. Oddly enough, the only exception I remember was in the case of the late Duke of Albany—reverenced by loyal English people as a saint and by his elder brother's gay associates pronounced "a muff." It was whispered that he had in the sunny South a questionable and sad little romance, and that it had to do with his untimely and sudden death. But I don't believe it. No Guelph ever committed suicide.

Leaving aside the deeper question of personal morality, the most serious lacking in the character of the Prince of Wales is the lack of seriousness. He is a man who, of all things, loves to be amused, and who is not overscrupulous as to who or what amuses him. In his visits to Paris he frequents the Palais Royal and Opéra Bouffe, and between the acts drops into the *loges* of the prettiest and gayest of the artistes. This habit is so notorious that Zola did not hesitate to put him into the dressing-room of his beautiful and terrible "Nana." In London comic actors, singers, and personators, all sorts of "funny men," and bright, original, witty women are sure of his gracious patronage. He finds high tragedy, even when superbly presented, as at the Lyceum, "slow," and classical German music—even the compositions of his lamented father—a bore; while, when he goes to grand opera, he generally goes to sleep. He is royally fond of good living, the turf, and all sorts of sports; is a great slaughterer of pigeons, and once shot a corralled elephant. He has a quick eye, and a passionate admiration for beauty. He entertains munificently, but his guests, even when foreign princes, are generally respectable people. The clever men and pretty women of inferior station, or no station at all, whose acquaintance he wishes to make, he manages to have invited to the house of some obliging friend, where he meets them. One of the best things I know of him is his hearty liking—something as near friendship as a prince is capable of—for certain beautiful countrywomen of ours, whom he has felt compelled to respect. I

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will instance Miss Anderson, Mrs. Potter—yes, and lovely Miss Jenny Chamberlain. To none of these has the flattering regard of this middle-aged "Prince Charming" been a real benefit, perhaps, but I believe it was an honest and loyal tribute to beauty and genius. The Prince is beyond question kindly and generous; men of his set pronounce him "a capital good fellow;" but, Republican as I am, it seems to me that the heir to the proudest and noblest Crown in the world should not be any fellow's "good fellow." If anything could sober the man, even after a wild youth, it would seem that a time like this were enough—a time when the rising tide of popular disaffection, the sullen, miry tide of desperate want, is lapping against the steps of the throne—when the political sky of all Europe is black with threatening and lurid with portents.

In his marriage the Prince of Wales has no advantage over his brothers, except in the popularity and beauty of his wife. The Duchess of Edinburgh, though little liked in England, is a woman of strong character, rare intelligence and dignity of demeanour; the Duchess of Connaught, an excellent little creature, and no fool, holds her husband's heart in spite of her exceeding plainness; while the Princess of Wales, amiable, graceful, and gracious, is rather negative in character. She is preternaturally young, with no trace of sorrow or trial, or even thought, in her pretty, placid face; fond of amusement, frankly frivolous, and not too jealous of her dignity. In fact, the charming royal matron yet retains all a pretty girl's love of admiration, dress, and adornment.

It is little wonder if in these critical times serious English people look forward with some apprehension to the coming to the throne of this pair of perennially youthful pleasure lovers. They may love and admire, but they do not wholly trust them. They fear that the court of the future reign will be rather a mercantile than a moral advantage to London; that in it science, literature, and art of the highest character, great public enterprises and schemes of education and benevolence will find even less aid and comfort than in the present melancholy, migratory, and miserly court; while through its favour will flourish mightily costumiers, milliners, and tailors, funny men and horsey men, French *comédiennes* and singers, and American champion shots, showmen, swimmers, and pugilists.

On the second Sunday in December good English churchmen must have prayed with unusual fervour for the Queen long to reign over them, steady and stolid, proper and pious as she is, for the mischievous little bird of the telegraph must have carried to the remotest parts of the kingdom news of the interview between the British heir-apparent and a notorious American prize-fighter. The account of the courtesies exchanged between these two powerful personages, in which the Irish-American did not by any means take a secondary position—the report of the conversation, liberally spiced on both sides with the slang of the ring, and preceded and followed by "hearty hand-shakes" must have been tough reading for aristocratic and refined Conservatives. Yet I am afraid there is not among the entire English aristocracy a peer or a prelate too proud to kiss the hand of his Royal Highness after the grip of Sullivan the slugger.

But we republicans should not be troubled. The less the Prince realises the mighty responsibilities and magnificent opportunities of his own position, the more he cheapens royalty through such unworthy associations, the better for the principles of democracy and equality. Let him continue to make light of his dignity and his destiny a few years longer, and a great change must come either in him or the entire system of English sovereignty. This is an age of miracles; the saving change may come in him, and he may yet show himself as moral and as mean as "Prince Hal," who as Henry V. publicly cut poor old Jack Falstaff, and, "unkindest cut of all," preached to him like a Salvation Army exhorter. But that Prince of Wales was still young when he turned over a new leaf in history; this one has passed the age at which his father ceased from his virtuous labours, so is little likely to pose for posterity as Albert the Good II.

WATER MYTHS.

By Stella Occidens.

AMONG the ancients the seas near shore were supposed to be inhabited by beautiful beings called Sirens or sea-nymphs. They had the power of charming all who heard them by the sweet tones of their voices accompanied by irresistible strains of music. We are told in the well-known story of Ulysses that Circe warned him against these beings. Some of his men fell victims to Scylla, the once beautiful water-nymph, transformed into a horrible monster on account of her indifference to the pleadings of the fisherman Glaucus. Ulysses again encountered danger whilst passing the isle of Calypso. Homer thus describes the beautiful grotto in which she entertained the hero:—

> A garden vine, luxuriant on all sides,
> Mantled the spacious cavern, cluster-hung
> Profuse; four fountains of serenest lymph,
> Their sinuous course pursuing side by side,
> Strayed all around, and everywhere appeared
> Meadows of softer verdure purpled o'er
> With violets; it was a scene to fill
> A god from heaven with wonder and delight.

Calypso urged Ulysses to remain with her, but he longed for his home, and, compelled by a command from Jupiter, she allowed him to return. She provisioned a raft for him, and all went well at first, but presently a storm arose, and the raft was destroyed. A sea-nymph took compassion on Ulysses, and, in the form of a cormorant, alighted on the raft and gave him a girdle which enabled him to reach land.

Thus some of these sea-nymphs were regarded as destructive, whilst others helped mariners. Among the beneficent nymphs was Ino, the daughter of Cadmus, who was made goddess of the sea by the gods. She had cast herself into the sea from a high cliff, with her little son Melicertes in her arms, whilst pursued by her husband Athamas. In a fit of madness he had slain his son Learchus, and she feared the same fate for her only remaining child. She became the protector of sailors, and saved them from shipwreck.

In Norse mythology Ægir is the divinity of the sea, and Ran is his wife. She has a net in which she catches shipwrecked mariners, and she claims their bodies whilst their souls go to heaven. Ran has nine daughters, the waves who assemble together as their father wishes. They have long golden locks and flowing white veils, and they are called billows or surges when the wind blows. Then they lash themselves against the shores and on the rocks. They rest on a hard rocky bed, and do not play in calm weather. The names of these daughters vary according to their appearance. Thus they delight in such names as Billow, Raging-sea, Sky-clear, &c.

In Danish mythology we have the pathetic story of the little mermaid who saved a prince from drowning when his ship was wrecked. She swam with him to shore, and laid him in the warm sunshine. But a great yearning filled her soul for the beautiful prince, and from that day she longed to see him again. At last, after great trials, she obtained her wish, but withal lost her beautiful voice.

She charmed the prince with her beauty and grace, but did not win his love. He married another, and her little heart was broken. She became a Light-elf, or spray of the ocean, and immortal.

The German tradition of the Lorelei is quaintly beautiful. In days of yore, a charming maiden lived on the rocks known by this name. She sat on them every evening and combed her golden locks, or played strains on the lute, accompanying the sweet tones of her voice. Many were lured to their destruction by approaching too near. The son of the Pfalzgraf longed to see her, and as he approached the rocks she appeared, dressed in white and veiled. The youth leapt into the waters so as to reach her, and was drowned. His father sent soldiers to take her prisoner, but, on their approach, she threw herself into the Rhine, singing—

Hasten hither, lovely waves,
Take me quickly to your caves!

The waters rose, and two waves bore her away whilst she still sang, and the Undine was never seen again.

It is related that at Bacharach there dwelt a beautiful maiden who was much sought after and admired. She would not accept any of the numerous suitors who loved her, because she loved and waited for a brave knight who had gone to Palestine. She caused so much love and jealousy that complaints were made to the Archbishop of Cologne. He told her he would take her to a place where she could await her lover, or, in case of his death, take the veil.

She was escorted by three knights, and when she came to the Lorelei she ascended the rocks to take a last look at the Rhine. In the distance she saw a boat bearing her lover, and, overcome with joy, she fell on her knees and extended her hands towards him. He saw her, and, whilst gazing at her, his boat was caught in the whirlpool and suddenly disappeared. As all gazed in horror at the spot, a pale figure with fair hair appeared on the surface of the water. Then the maiden, with a cry of despair, leaped from the rock into the water where her lover had sunk, never to rise again. They were afterwards found locked in each other's embrace. This event confirmed the belief in the existence of the Nymph of the Lorelei.

A similar legend is told about a gloomy lake called the Wildsee, not many miles from Baden-Baden. Here dwell water-sprites, who spend their days on its banks, weaving garlands, playing on their lutes, and singing—enchanting unwary travellers. A young shepherd-boy once heard a beautiful strain of music, and, approaching the lake, saw the fair singer. He gazed spell-bound, as she played on her harp. As soon as she heard his step, she gave him one glance, and then sprang into the lake. That glance drove him wild, and he wandered from place to place, but after a time disappeared, and was never heard of again.

The waters of the Mummelsee, a large lake not many miles distant from the Wildsee, are generally calm; but at times, when the day is most peaceful, the lake is covered with billowy waves. Here, according to ancient tradition, dwell beautiful Undines, who are formed as if of snowy lilies, with the exquisite blush of a delicate rose. Every month they rise to the top of the lake, and revel in the moonlight, sitting on the rocks, and combing their flowing locks. As the first streak of dawn appears they have to return to their home, otherwise an ugly old water-dwarf orders them home, and they dare not disobey him.

A French legend tells the story of a cloud-maiden, a kind of mermaid, called Melusina. Raymond, Count de la Forêt, of Poitou, having unfortunately killed his patron during a hunting excursion, fled into the deepest recesses of the forest. After wandering for many hours, he came to a pleasant glade, illumined by the moon. In the midst bubbled up a limpid fountain and flowed away over a pebbly floor with a soothing murmur. Near the fountain-head sat three maidens in glimmering white dresses, with long waving golden hair and faces of inexpressible beauty.* One advanced towards Raymond, who was so charmed with her beauty that he became betrothed to her before daybreak. She became his wife with the restriction that she might pass Saturdays by herself. This was agreed to, and for a time all went well. One day, however, the Count, unable any longer to restrain his curiosity, broke his promise, and made the discovery that his wife, during the time thus given to her, was transformed into a mermaid. He said nothing about the matter until one day when, being angry with his wife, he reproached her for being "a vile serpent, contaminator of his honourable race." Casting on him a pitiful look, she disappeared for ever from his sight through the castle window. It it said, however, that whenever one of the Lords of Lusignan is about to die she hovers about the castle, moaning like a banshee.†

The story of Undine is somewhat similar to the above; but she marries the knight Huldebrand in the hope of obtaining a mortal soul. A Flemish legend tells of three Nixies who came from the waves of the Meuse and danced with the villagers at their vintage-feast. They sang and danced most gracefully; and one of them, whilst dancing, took off her gloves and handed them to a peasant. When the clock struck twelve, the Nixies hastened away, but the unlucky one who had taken off her gloves could not find them again. She hastened away without them, but next morning the waters of the Meuse were blood-red, and these water-sprites were never seen again.

Among the peasantry of South Russia exists a belief in water-nymphs resembling the Nereids of Modern Greece and the female Nixies of Europe. In the Skazhas mention is often made of beauteous maidens who live beneath the waves, but can transform themselves at will into birds, and fly wherever they please. They often appear as ducks, geese, and other birds of the same species. They are the daughters of Morskoi Tsar, or Water King, who lives in a beautiful cave under the waters. At times he comes forth to seize a human being, generally a boy, who eventually marries one of his daughters. They escape to the upper world, but with much difficulty.‡

A story is related about a prince, who, on account of a promise made by his father, was obliged to surrender himself to the Water Giant. He fell in love with a beautiful maiden, who lived in the king's palace, and whom the king had stolen. She transformed herself into a ring, which the prince carried about with him until he escaped from the Water King, and then the fair maiden became his bride.§

Water-nymphs are also referred to in the mythology of the Western hemisphere. Many stories are related about them among the Red Indians. The Ottawas tell of a woman called Monedo Kway, who had a beautiful daughter. She was so handsome that her mother feared she would be stolen, so she put her in a box on the lake, and tied it by a string to a stake on the shore. Every morning the mother fed her daughter, and combed her long shining hair. Notwithstanding the mother's great care, her daughter was stolen by a superannuated old spirit called Iskhwon Daimeka, who married her. After three years a storm arose, and the waters destroyed the old spirit's cabin and himself, and bore the foam-woman home to her mother. But, alas! her beauty had now left her, and the mother had no longer any reason to fear that she would be stolen.‖

* Baring-Gould, "Curious Myths," p. 343.
† Fiske, "Myths and Myth-Makers," p. 97.
‡ Ralston, "Russian Folk Tales," p. 130. § Ibid. p. 143.
‖ Schoolcraft, "Hiawatha Legends," p. 213.

In Florida a beautiful legend is related about Wenona, who loved a warrior named Chuleotah. Unfortunately he belonged to a tribe at war with her father, and during a great fight the father killed him, bringing home the head as a trophy. When Wenona gazed on the well-known features, she fled from home, and cast herself in despair into a lake, now called Silver Lake.* She still lives there, and on a very clear day, when the waters are shallow, her beautiful palace can be seen. Her hair is the green moss that floats in the water.

SCRATCHING IN THE ANIMAL KINGDOM.

By Professor Samuel Lockwood.

FOR nearly two weeks, one midwinter, my studies were pleasantly interrupted by a nightly visit of that funny arachnidan, *Phalangium dorsatum*, Say. We often hear it called Daddy-long-legs, which name in England is given only to the long-legged dipteran, the *Tipula*, or crane-fly. My visitor's domicile was a nook somewhere in the library. As appearances are often deceptive, it would not be safe to predicate a literary taste of my bookish visitor, but the creature's measured gait and pedal sprawl over my written page did suggest the airs of a stilted critic. And yet, to use a trade-phrase, with all its seeming bigness, phalangium did not "size up much." Its egg-shaped body was exactly a quarter of an inch in length, and an eighth wide at its thickest part. Of its eight legs, each one in the shortest pair measured an inch and five-eighths, and in the longest pair the measurement exceeded three inches, a considerable spread for so little timber. There was quite a good understanding between us. It would allow me to touch the long, thread-like legs with my pen, and even to lift one up above the others, and the queer thing would keep the limb raised for several minutes, precisely as I would leave it, as if it were hypnotised.

The phalangium is a member of a tribe of the spiders known as the *Pedipalpi*, because the palps or feelers end, like the feet of many insects, in a claw, sometimes a pair, thus making a forceps. After my tickling his perambulators, Daddy seemed to have got his ideas started, for, having adjusted his octapodal highness upon my manuscript in most admirable equipoise, he began the delectable exercise of scratching his legs. I am sure that the operation was enjoyable to him, while to me the sight was very interesting. If Captain Cuttle should find it necessary to try the flexibility of a whip-stock, it is supposable that he would take the handle in his left hand, and with a pressing motion pass the whip for its entire length through the iron hook which served for his right hand. The whip would thus take on a loop-like curve, and would straighten itself out with somewhat of a snap. Just in this way did my spider scratch his slender legs—for one at a time were these long elastic limbs passed through the hook of the palp, when the limb would be bent like a loop or bow in the process, and as it left the hook or claw by its elasticity would do so with an almost whip-like snap.

The higher one ascends the animal scale in such observations, the more pronounced is found this habit of scratching the skin surface of the body. Individually, Maud S. and Coomassie may be "too high-toned" for such a practice. But these creatures are coddled out of conscience by the groom, who has the comb and the brush almost always on their pelts; hence, if these "high bloods" come not to the scratch, it is because the scratch comes to them. Cushie and Dray, put upon their own resources, enjoy hugely a good rubbing self-administered against a tree or post.

Happening one day in my lady's boudoir, I picked from the cabinet what I took for a pretty bit of *bric-à-brac*. It was an ebony stem, about fourteen inches long, not thicker than one's finger, and quite daintily turned. At one end was attached a pretty little hand deftly wrought in ivory. It could not be called a fist, for I noticed that the fingers were only half closed. The nails were well developed, and their ends or edges were set in a line. This artistic trifle seemed to me made for some special purpose. A whisper from a friend enlightened my wonderment—"A back-scratch." I caught at once. Now, I have read of a toy formerly common in England, which at fairs or upon occasions of a crowd would be passed over the back of a rustic, when it made a noise like the tearing of cloth, and suggestive of a rent behind, to the poor man's dismay. This, too, was called a "back-scratch." But that was simply the vehicle of a bit of mischief. My lady's back-scratch was for use in that very much out-of-the-way place between the shoulder-blades. This handy implement, though an article of *virtù*, was in the line of luxury, although the amenities would hardly approve the indulgence before eyes polite.

The above reminds how gingerly and faulty the treatment of the word is by the lexicographers. One would think it only meant to abrade, lacerate, excoriate, whereas how common the usage by which it signifies to titillate with mild friction! The Latin expresses the action nicely, *scabere cutem leviter ungue*, which in good English is simply —to rub the skin lightly with one's nails. Pliny has *aures pedibus*, scratching the ears with the feet, which suggests the experience of that tourist in Italy who rode a mangy mare. The beast had a bad habit of stopping to scratch her ears, and, the hind-feet being used for that purpose, the thighs of the rider received all the benefit of the operation, which, like tickling with a brickbat, was too crude for real comfort. But the ungulates generally are bunglers at this trick, though not insensible to opportunity, as witness when our neighbour's cow got into the lawn, and, wild with delight, went tearing through the soft evergreens, our pretty arbor-vitæ trees, which was so much nicer than rubbing against a fence.

It behoves to confess that Nature has been a niggard in this matter unto man, having done less for him in this line than she has for the beasts that perish. "The paragon of animals" is the victim of irritation from eczema in a hundred forms and degrees. Though having already thrown a stone at the lexicographers, here goes another, for we must cite from memory that churlish dictionary-maker, Dr. Johnson, who wrote in the first edition of his dictionary, "Oat—a grain used in England to feed horses; in Scotland, men." This was very unbecoming. But the food has much to do with the condition of the cuticle. Hence we put together the Scotsman's "oaten cakes" and the legend of the benevolent nobleman who set up scratching-posts in the streets of Edinburgh, and the canny benediction of each user of them, "God bless the Duke of Argyll!"

On the physical or rather physiological side of the question, a good deal might be said for this mild friction of the skin. Near the surface—that is, just under the scarf, or epidermis—the capillaries, almost microscopic blood-veins, abound in well-nigh infinite numbers. Each of these minute carriers or distributors of the crimson life-stream has along its sides its complement of nerves nearly parallel. Between these nerve-fibres lies the undifferentiated protoplasm, or life-stuff, which is the supply of constructive matter for the use of these tiny builders, for out of this life-

* Silver Lake is a short distance from Ocala in Marion County, North Florida, and is quite a well-known resort.

matter, or bioplasm, each cell is built. But even mortar may need quickening—so this life-stuff may become too passive, that is, *quasi* torpid. These nervous fibrillæ are the electric wires, and gentle friction is the dynamo to generate the mysterious fluid and quicken the conductivity along the lines.

Strange to say, this scratching has also its psychological side. Let a puzzle be propounded, and why on the instant does the nonplussed one institute a rummaging for an idea in the hirsute thatch of his cranium? And everybody does it, even he "of the front of Jove himself" more than the beetle-headed clown. We asked an explanation of our encyclopedic friend who "knows it all," and quoted to him the well-worn distich:—

> Be mindful, when invention fails,
> To scratch your head and bite your nails.

Upon the word he began dishevelling his carefully brushed hair, saying it was "a poser," and, by way of compliment, that it "was not slow"; to which our response, "No, it's Swift"; at which he laughed, though he had quite missed the point, for he rejoined that he always thought us "a little fast."

It is truly wonderful how lavishly and admirably Nature has gifted many animals for this very exercise of scratching lightly with the claws. At my feet lie Tom and Dick, two good friends. The former is a fine young Maltese, the latter an old black-and-tan. The cat's claws are very sharp, the dog's are less so. Both animals are clean and in good condition, yet both appear to take delight in a good scratching at the back of the head, and especially behind the ears. The hind-foot is the instrument used, and with what delicacy—yes, nicety, or precision of adjustment! So rapidly does that foot move, that it makes a fan-like shadow; and so exact the distance at which the keen, protruded claws are set, that it secures only a delicate touching of the parts, producing the pleasant titillation of the tonsorial brush. Any coarser adjustment of those needle-pointed hooks and the blood would flow from the lacerated skin.

But, even more than with the mammals, is this cuticular titillation a necessity with the ordinary fishes; and, since they have neither hands nor feet, how is this want in their case gratified? I have witnessed the operation many times, yet fear a failure to adequately describe it. The scaly coating of a fish needs an occasional cleaning, as does the copper sheathing of a ship; for, with both, a foul surface impedes progress through the water. On each side of a typical fish is a thin line, known as the lateral line. It is, in fact, a mucous canal, from which issues at the will of the animal a lubricating fluid, which, spread over its scaly sheathing, lessens friction, and so facilitates movement in the water. This mucous line is made up of rows of pores, which communicate with the slime-secreting glands. Leydig discovered that each of these oil-producers had its own nerve, thus constituting a series of sense-organs. And very delicate is their sense, as by them the fish gauges the weight of the water-mass, also the direction and resistance of currents. But associated with these nerves, arranged in tufts or buttons, are air-cells; hence it seems certain that the fish is able to appreciate vibration in water, whose wave-lengths are larger than are those of sound. The faculty of appreciating the waves of light we call seeing, and similarly of sound, hearing, whose waves are much larger than those of light. But our scaly subject is endowed with a third wave-measuring sense, in which possession it out-paragons "the paragon" himself. It can appreciate the trills or waves of water vibration, and of this faculty our language has no word to express the name.

Now these oil-yielding tubes above described may get clogged, or the glands become torpid. Here, then, are sense-organs to declare the state of affairs. Hence arises the necessity for the animal either to clean off its body armour or to stimulate into activity the indolent organs. And, in fact, in other ways, fishes have their own eczema, or diseases of the skin. Sometimes there is a blistering or deterioration of the cutis, and sometimes a species of *Saprolegnia*, a fungous parasite, sets up a flocculent growth on the cuticle. For any of these instances friction is the only remedy, and its exercise is unquestionably pleasant to the fish.

But how can a fish scratch itself? Sometimes in the way of Cushie, as when she rushed through the evergreens. So a fish will often dart through a dense clump of soft water-weeds. But this amounts to little else than a gentle titillation. The scaly sheath is not to be cleansed so easily. I have seen the performance many times, and by several species, but none have so much interested me in this respect as the sunfish. Take the one best known to the pin-hook anglers, and often called "pumpkin-seed." There is a boulder with a smooth, clean surface. The fish is steady; its big eyes seem of a sudden to glow with a blue light. Every fin is set, even to the dorsal, which bristles with its keen spines. The fish seems aiming for that stone. The propulsion must come from the caudal and the side fins, but mostly from the former. All these give a simultaneous blow against the water; at the same time, as if it were in the way, the topsail—that is, the dorsal—falls and is snugly reefed. All this is done in a moment, and such the force that the fish truly darts, threatening to butt its nose against the rock. The speed is high, but, just ere the rock is reached, there is a marvellously sudden bend of the body, the most convex point being the exact spot which is to be scratched. Though very rapid, so well-timed is the movement, and so nice the adjustment of the position, that the pressure or amount of rub or friction is correctly received, and the point of impact is precise, and the body glances from the rock. The collision is so accurately gauged that no harm is done. And similarly, and with a great variety of ingenious posturing, the fish subjects all parts of its body to this treatment. It even contrives to scratch the top of its head, by bringing the desired spot into the proper position at the precise moment of the glancing impact with the stone. The feat is delicate and deftly, as if an acrobat should in his somersaults comb his hair against a rock with no harm done every time.

Having enjoyed the use of a large aquarium for the study of fishes, it has been an object with me to anticipate their wants. Hence I have purposely given them scratching-stones properly adapted to their needs. I was surprised that a favourite object for this purpose was a large live river-mussel, the *Anodonta excurvata*. The corrugations of the shell, which mark its growth, form a series of smooth ridges, upon and against which, with their contortions of twists and bends and tilts, these fishes glance in scratching themselves. As to ichthyic emotion one cannot say much. That they enjoy these exercises I am sure; and I almost think they know their benefactor, for they come at his call at feeding-time—though up to this present writing I have not observed anything that might be interpreted as a grateful recognition of benefits conferred; certainly nothing commensurate with the canny benediction, "God bless the Duke of Argyll!"—*Popular Science Monthly.*

An Indiana Monstrosity.—A two-headed child, near Princeton, Ind., was born on January 9 to the wife of Henry Wilson, a farmer living four miles from that city. It had two well-formed heads, one just behind the other, and weighed twelve pounds. The strangest feature about it was that the heads were covered with hair three inches in length. The front head was more perfectly formed as to features than the one behind, which had only an indistinct nose and mouth. The child only lived a few minutes after birth.

XUM

THE STARS OF OTHER TIMES.

THERE is a strange charm in contemplating the star-strewn heavens, with the thought in remembrance that as the constellations are now, so were they in all the past ages over which history extends its survey, and beyond them through the ages when man himself had scarcely begun to exist as a reasoning race, and in ages still more remote when this earth was inhabited by millions of living creatures, but by none who could think about the wonders surrounding them. Here and there a few stars have changed in lustre; new stars have appeared and old stars have vanished; the swifter motions of a few (including some of the chief brilliants of the heavens) have carried them to new positions among the star-groupings, but in the main the scene presented by the star-strewn heavens now is the same which was presented at the beginning of the Christian era, the same which Ptolemy and Hipparchus surveyed, the same which the builders of the Great Pyramid studied more than five thousand years ago, the same which the first races of men contemplated with slowly growing intelligence, the same on which the eyes of all animal races must from time to time have been turned during the millions of years which have elapsed since life began upon this earth.

Yet the aspect of the constellations, as seen from particular latitudes or positions on the earth in long past ages, differed notably from their aspect as seen from such places now, even though the actual configuration of the star-groupings was the same. The constellations being carried round the polar axis of the heavens by the diurnal motion, take varying positions above the horizon of any latitude, these positions depending upon the position of that axis, which is coincident, of course, in direction with the axis of the earth. And owing to the reeling, or gyration, of the earth's globe, her axis is constantly changing in direction. It is inclined about $23\frac{1}{2}°$ to a perpendicular to the plane of the earth's path, and thus, neglecting slight changes in the position of this plane, the points on the heavens to which the earth's axis is directed—that is, the poles of the heavens—travel in circles about 47° in arc-diameter around the poles of the ecliptic, the period of circuit being about 25,868 years. This suffices, of course, to modify very largely, in long periods of time, the aspects of the constellations, themselves unchanging, as they are carried by the diurnal motion across the sky. The present north pole of the heavens, for example, which lies due north about $51\frac{1}{2}°$ above the horizon of London, was more than 47° from the point in the star-sphere which was the north pole 12,934 years ago; so that at that time the present pole-star (not quite coincident with the north pole, but near it) was carried round the actual pole in a circle 94° in arc-diameter, ranging from an altitude of 4° or 5° above the northern horizon to an altitude of 81° or 82° above the southern horizon. Not only have the movements and positions of individual stars been thus modified, but the positions of star-groupings, when most favourably situated for observation, have been so modified as in many cases to make it difficult for us to understand how men in old times came to imagine resemblance between star-groupings and various objects, animals or otherwise, where now no trace of resemblance is suggested when those star-groups are studied as actually seen in the heavens.

It has seemed to me that it would be interesting, and might lead to results of considerable scientific and even historic importance, to prepare a chart by means of which the exact aspect of the heavens as seen at any hour of any night in the year, from any given latitude, at any epoch in the past or future, might be readily determined. All the maps hitherto constructed to illustrate the effects of the precession of the equinoxes have shown no more than the movement of the north pole of the heavens around the north pole of the ecliptic. What seemed wanted was a map from which the position of the equator at any epoch might be obtained at once; and thence, by simple constructions, any further information which might be required respecting the appearance of the night skies at different hours and seasons at that epoch.

The accompanying map is the northern map of a pair which I have drawn for this purpose. (The southern map is already engraved, and will appear next month.) It is simply a stereographic map of the heavens to a distance of 100° around the north pole of the ecliptic as centre. Thus the Zodiacal zone is the outer zone—20° wide—of the map; and the circle $23\frac{1}{2}$ in arc-distance from the centre of the map represents the apparent path of the pole of the northern heavens.

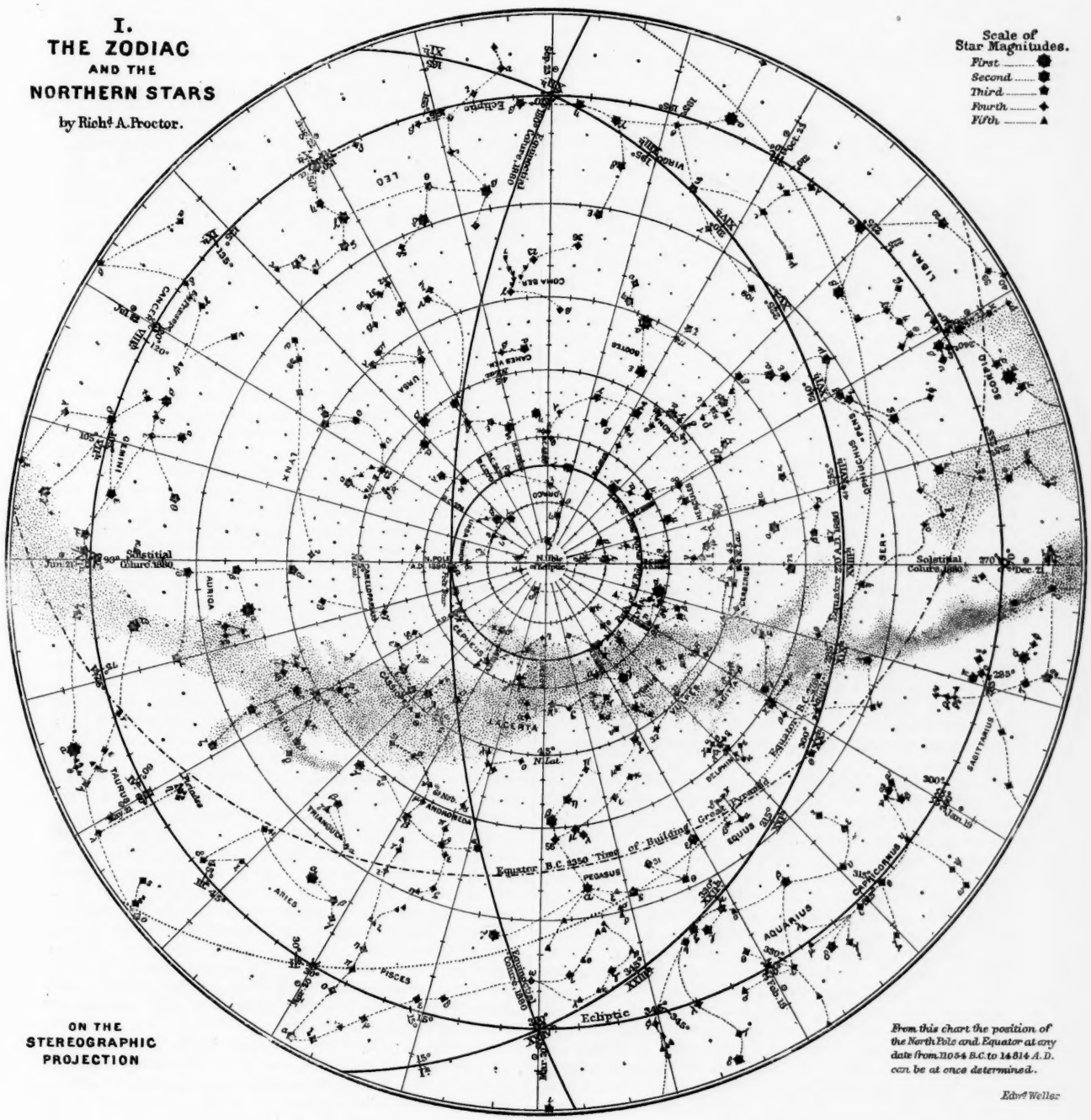
The map being on the stereographic projection, it is a very simple matter to mark in the equator (and colures if needed) for any given epoch. Thus, suppose the epoch to be 276 B.C., or 2156 years before the date of the map (1880). The precession of the equinoxes in 2156 years (one-twelfth of 25,868 years, the precessional period) amounts to 30° (one-twelfth of 360°). Thus, as the precessional motion carries the crossing-point of the equator on the ecliptic to meet the sun, we must take a point 30° in advance of the present crossing-point (♈), or to the first point marked ♉ in the map. This and the opposite point on the ecliptic, marked ♏, are the crossing-points of the equator on the ecliptic in the year 276 B.C. Then on the longitude circle through ♋ (that is, the radial line in the map to the point on the ecliptic midway between the two just determined), we measure off $23\frac{1}{2}°$ towards the pole of the ecliptic—that is, towards the centre of the map. A circle swept through the point thus determined and the two crossing points determined before, shows the position of the equator in the year 276 B.C. This circle is shown by a dotted arc in the accompanying map. The corresponding position of the north pole of the heavens at that time is shown on the circle indicating the path of the pole, 30° in longitude from the present position of the pole. The nearest visible star is the 5th magnitude star 4 Ursæ Minoris. (The stars 4, 5, β and γ of the Little Bear, doubtless formed the true Dog's Tail—γ marking the tip of the tail—not, as is commonly said, the stars now forming the constellation Ursa Minor, a group which can in no sense be likened to a dog's tail, whereas the group of four stars very well might. This Dog's Tail was the veritable polar-star group of the time of Hipparchus; and the name Kunosoura, or Dog-tail, served well to indicate the pole of the heavens, though perhaps few who use its modern form, Cynosure, and speak of a centre of attraction as "the cynosure of every eye," are aware of the real meaning and origin of the expression.

In the map there is also shown the position of the equator in the time of the building of the Great Pyramid, some 3350 years before the Christian era. (The positions of the pole in 3350 B.C. and 2170 B.C., equi-distant, as the map shows, from α Draconis, serve to explain why for awhile the later date was accepted as that of the building of the Great Pyramid. But now there can be no doubt that the earlier date is the true one; for Egyptology and the astronomy of the Great Pyramid are brought by this date into agreement, whereas the date 2170 B.C. is wholly inconsistent with the Egyptian records by which the dates limiting the dynasty of Cheops, Chephren, and the rest, have been indicated.)

The position of the equator as thus assigned for the time

I.
THE ZODIAC AND THE NORTHERN STARS

by Richd A. Proctor.



ON THE STEREOGRAPHIC PROJECTION

From this chart the position of the North Pole and Equator at any date from 11054 B.C. to 14814 A.D. can be at once determined.

Edwd Weller

of the pyramid builders is important as apparently indicating the aspect of the heavens at a time not very far from that at which the most ancient of the constellations received the names they still retain. This point, and other matters, will be considered later, as well as the simple methods by which a series of maps (for any date and latitude)—corresponding to the maps of "The Stars in their Seasons" for England and the present time—can be readily constructed.

(*To be continued.*)

OLD AND NEW ASTRONOMY.

AN AUTOBIOGRAPHICAL SKETCH.

TO explain the origin and purpose of "Old and New Astronomy"—a treatise which has been nearly a quarter of a century in preparation—one or two personal matters have to be touched upon, but I shall pass lightly over such details.

In October 1864 I was led to enter on scientific study by a domestic sorrow on which I had been brooding too deeply for my health. I selected astronomy as the subject which had greatest attractions for me, and, after reading afresh certain treatises, including Herschel's "Outlines of Astronomy," I sought for more detailed accounts of problems which appeared to me full of interest. Disappointed in this search, I began the preparation of the first of a series of monographs which I proposed to produce, in each of which an astronomical subject of special interest was to be carefully studied. I proposed in these works to deal with considerations which seemed to require fuller discussion than they had hitherto received, except in scattered papers, technical and unduly elaborate in character, so as to be calculated rather to load the back shelves of the libraries of learned societies than to instruct the world. In this way, and as yet by no means appreciating either the extent of the work I was attempting, or exactly what was fittest for my purpose, I wrote my treatise "Saturn and its System." I proposed to follow this up with similar treatises on Jupiter and Mars (of Mercury, Venus, Uranus, and Neptune, we know too little for monographic work), the sun, the moon, comets and meteors, the stars, star clusters, and nebulæ.

When "Saturn" had been published, I was led to defer my general plan for a while, in order to prepare a series of star charts (my "Gnomonic Star Atlas"), suggested during the preparation of that work; and in preparing the atlas I collected the materials for my "Handbook of the Stars." I had already begun, however, a monograph on Mars, when, in May 1866, a stroke of fortune deprived me of the means which had enabled me to carry on the work I had begun without any anxiety respecting the commercial success of the several volumes required for its completion. I had become too much attached to the work to be willing to turn wholly from it; yet it seemed as though other duties would force me to do so. Most occupations by which I could hope to support my family would have debarred me from all chance of continuing my work effectively. I determined that I would not seek for such employment in what is sometimes (I can scarcely imagine why) called "professional astronomy"—as, for instance, work in Government observatories or in collegiate teaching—as some appear to have found compatible with independent research and the work of scientific exposition. I was satisfied that I could do no good work in that way in the line I wished to follow, even if I had deemed it honest to accept a salary for doing one kind of work while devoting my main energies to another. Neither observatory work nor college teaching tend effectively to widen one's views of the great problems of astronomy; while too often it is found that official position, whether among the rank and file or in command, tends to warp both mind and character, and to diminish mental elasticity, versatility, and originality. I had already recognised the signs of this so clearly in treatises coming from such sources that I decided to retain the independence of my position, even though at the cost of some personal inconvenience.

After a year or two of interruption in my work, and considerable anxiety about other matters, I found what I sought in scientific literature, to which later I added scientific lecturing. I was able to turn my scientific notebooks to useful account by employing their contents as the materials for scientific exposition, finding that the general public needed only clearness and simplicity of expression, and the avoidance of unnecessary technicalities, to accept scientific teaching as they accept history, fiction, and kindred literary matter. Moreover, in the work of popular exposition I obtained unexpected help in my scientific researches. I found that the endeavour to present the results of scientific reasoning clearly and cogently affords a severe test of their accuracy. Often I have had to modify and more than once to abandon a theory, which, until exposed to this test, had appeared sound in all its parts. Even in lecturing I have recognised this quality in the task of explanation; while repeatedly also new ideas outside the theories I had already formed on specific subjects have been suggested during the actual progress of a lecture, for digestion and assimilation (if approved) at later leisure. Moreover, my lighter scientific treatises, essays, and lectures, have often brought me into correspondence with other students of science having facts of interest to communicate, or thoughts of value to suggest.

Thus, then, the two lines of work I had undertaken were continued together, each progressing at first slowly, but afterwards more effectively, until I had overcome the initial difficulties (which some had told me must necessarily be overwhelming), and had little further anxiety about either portion of my work. I was for a time interrupted, indeed, by the effects of a mistake I made in entering for a time on work connected with the Royal Astronomical Society, a body vexed with many turmoils, from whose perturbing influences I had trouble in withdrawing myself. I had, however, the satisfaction of knowing that I had fallen into this annoyance in the pursuance of a scientific duty, the correction of certain errors into which the chief official astronomer of that time (Sir G. B. Airy) had fallen respecting the transits of Venus in 1874 and 1882. I am not sure that apart from the improvement of the Government schemes for observing both transits which resulted from the inquiry, my labours were not fully repaid by the attention I was then able to direct to the fact, too commonly overlooked, that official scientists are the servants of the public (which includes scientific volunteers), and not set in authority over them. I was simply correcting inferior work of the chief of our paid astronomical servants—usually, it must be admitted (nay, I have always proclaimed) one of the hardest-working and most trustworthy of our Government astronomers.

But while I was able at once to maintain those whom it was my duty to maintain, and to continue my scientific work, I was not able to continue the production of the proposed series of monographs. A monograph on Mars, offered in turn to three leading publishing firms, was rejected by all of them. A large atlas on a new plan, since successfully carried out, was declined not only by publishers, but by the Astronomical Society. My "Other Worlds than Ours," in which I presented a brief abstract of my views on astronomy, had to appear under the guise of a popular

treatise to gain acceptance. Luckily, under this guise, the book was commercially successful.* The "Sun" was only in appearance a resumption of my original plan. Even as it was, the work was not sufficiently popular, and many passages in the first edition which had been most carefully written had to be removed from later additions, as too difficult for the general reader. The "Moon" was nearer the mark, at least as regards the first half of the first edition. But here again the reading public showed that they must not be invited to anything like arduous study, or even to any prolonged effort of reasoning. The best parts of the work had to be excised from the later editions. My "Geometry of Cycloids," and the books in which I discussed the Transits of Venus, were naturally regarded as still less suitable for the general public, though simple enough, I had thought, for all readers.

But while the plan for producing separate treatises had to be given up, I continued to keep in view the general work in which I had proposed to present in popular form a summary of the results presented in fuller detail in those monographs. "Old and New Astronomy" is the treatise thus planned as far back as in 1864, though it need hardly be said that the original plan has been largely modified during its subsequent development. The plan of this general work has been indicated elsewhere. So far as I know, no work of the same scope is in existence.

ROYAL VICTORIA HALL.

(*To the Editor of* KNOWLEDGE.)

ON the 14th inst. an exceedingly interesting lecture was given by Mr. Wethered on "Volcanoes and Earthquakes." It is difficult to give an abstract of a lecture which depended so much on the great beauty and interest of the slides shown. One set of these were taken by a San Francisco photographer during the recent eruption in Hawaii, and sent over by H.M.'s Consul in San Francisco specially for this lecture. They were taken at intervals of five minutes, and showed the progress of the lava. The first showed the molten stream just slipping over a cliff into the lake below. In the next the heated mass falling into the water had already begun to generate clouds of steam. Before long these obliged the photographer to shift his position, and the series ended with a photograph taken some time later, when the lava (which had entirely filled up the little lake before mentioned) was cool enough in places to walk on, and a scene of more entire desolation could not be imagined. Other views were taken in the crater of Mauna Loa, others again in the Bay of Naples; while a very interesting set showed the scene of the fearful eruption in New Zealand, including a portrait of the old chief who a few days before predicted an awful calamity. This he did because he was vexed at being refused a loan by a neighbour, but he did not believe in his own prediction sufficiently to run away, and he was killed by the eruption. Passing on to earthquakes, the lecturer said eruptions were always preceded by earthquakes, but their causes were not certainly known. In Japan a very delicate apparatus is in use for recording the shocks. A very slight jerk sets up an electric current by which one clock is stopped (recording the precise second of the shock), while other clockwork is set in motion by which paper is drawn across the point of a pencil. Thus the varying regularity and direction of the dots and strokes on the paper indicate the force and direction of the shocks. So delicate is this apparatus that it shows not merely actual shocks, but so-called "earth tremors," which seem to be due to the action of the wind on the earth. One theory of earthquakes attributes them to the shrinking of the earth's crust as it cools, which causes sufficient pressure to liquefy some of the rocks in the interior. As they liquefy they expand, and shake the earth above them in their efforts to make room or find a vent. Another theory is that water, penetrating through cracks to the hot interior, is changed into steam, and produces the same effect. Professor Milne's opinion is that earthquakes are the result of both causes combined, and his opinion is of weight, since he has for years been studying earthquakes under the most favourable circumstances in Japan, where they have an average of two daily!

The lecture concluded with a set of very interesting photographs, taken in Charlestown just after the earthquake there. In these the apparently capricious action of the destructive force was very striking. One house might be reduced to utter ruins, while the next was almost untouched.

The chairman (the Hon. and Rev. Canon Pelham) proposed a vote of thanks, which was very heartily responded to.

The lectures in prospect are—February 28, Mr. E. Hodder on Lord Shaftesbury; March 6, Dr. R. D. Roberts on "Nature's Sculpturing Tools"; March 13, Professor Sylvanus Thompson, "Electric Bells"; March 20, Dr. A. Wynter Blyth, "Food and its Adulterations"; March 27, Dr. Litton Forbes, "The Great Ice Age."

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IN THE BEGINNING.*

SO long as human vanity, fed and supplemented by man's ignorance of the nature of his surroundings in the cosmos, prompted him to believe that our tiny world was the end, centre, and cynosure of all creation; that the sun, moon, and stars and all the host of heaven were called into existence solely for his benefit and guidance, and even in some sort that they might influence and reveal his destiny; in short, that the entire visible universe was brought forth by the fiat of Omnipotence for his behoof, and for that alone; just so long was he content to accept such legends and myths as that which appears, in two totally separate forms, in the opening chapters of Genesis as an actual historical account of the origin of the earth with its living wonders, the sky, and the infinity of suns and worlds of the macrocosm. The first blow (albeit, in the then existing state of knowledge it was but a feeble one) inflicted on this belief was by the putting forth by Copernicus of that theory of the solar system which placed the sun in its centre, and converted the hitherto supposititious heart of the universe into an insignificant member of a number of bodies revolving round that mighty source of light and heat. And, necessarily as

* Except Sir John Herschel and Mr. Herbert Spencer in England, Gérigny in France, and Oscar Peschel in Germany, few recognised the real purport of that work, which critics agreed in discussing from the point of view of those who take interest in the scarcely scientific problem of life in other worlds. Peschel recognised the chapters on the stars as deliberately challenging the accuracy of the Herschelian theory of the stellar universe, and, after an exhaustive analysis, decided that that theory was shown to be absolutely untenable.

* "The Story of Creation: a Plain Account of Evolution." By EDWARD CLODD. (London: Longmans, Green & Co. 1888.)

astronomical knowledge advanced, and it was found that while a persistent and unintermittent journey to the then outermost known boundary of the solar system pursued at the rate of fifty miles an hour would occupy 1,800 years (it would take 6,125 years to travel to the last-discovered planet Neptune at the same rate!), and when it was further realised that our entire system was but an impalpable mote of dust in the immensity of space, then, and not till then, did men begin to question that story of the world they dwelt on which had so long satisfied them. And, treading closely on the heels of the astronomer, came the geologist, who showed irrefragably, from the mere thickness and superposition of the strata of the earth's crust, that æons of ages must have been required for the deposition and consolidation of those rocks, which it had been aforetime believed were the work of a day or two, some 5,000 years or so previously. Furthermore, from the rocks, thus interpreted, did the palæontologist extract the remains of a series of plants and animals ranging back to an antiquity so hoary as to baffle our finite conception and merely appal us; and then the comparative anatomist and physiologist showed the affinity of these extinct types with those existing, and pointed out how a certain continuity of plan had persisted from the dawn of life, so far as it was traceable. But this was all. Maillet, Buffon, and Lamarck all advocated, with increasing clearness, the theory of development and variation, having its origin in the surroundings of animal and vegetable life; a theory revived by Dr. Robert Chambers in the days of our fathers, in his now but unfrequently read "Vestiges of Creation;" but dawning popular enlightenment on this question was opposed and crushed by the dead weight of theological ignorance, intolerance, and actively exerted authority, and, up to within the last twenty or thirty years, the special creation and absolute immutability of every plant and animal was a creed, to doubt which was to be *anathema maran-atha*. The lion, the horse, the cat, the ape, and *à fortiori*, man himself, was each held to be the lineal descendant of an identical prototype, which appeared by the fiat of the Almighty much after the fashion of the egg which becomes visible in the fingers of the conjurer, who an instant before has invited his audience to "perceive that he has nothing in his hand!" The wonderful revolution in thought which has occurred in our own day with reference to the history of creation may be said to have had its inception—as pointed out by Mr. Clodd in the delightful volume now before us—in the sailing of that Newton among naturalists, Charles Darwin, from Plymouth in H.M.S. *Beagle*, on December 27, 1831. Upon the observations made during that voyage was founded that imperishable theory, subsequently elaborated by continuous research, and embodied in the year 1859 in a book that will survive as long as the language in which it is written—we mean of course "The Origin of Species"—in which the ground was at once and for ever cut from under the feet of those who insisted that species were the visible results of primordial acts of special creation. Yet farther. Physicists, of whom Laplace may for our present purpose be held to have been the first, have traced back our earth and its congeners from the time when the geologist shows it to us superficially solidified, but still calid with internal heat, to a period when it formed part of a stupendous mass of mere glowing mist or vapour; while at the other end of the scale psychologists and moral philosophers, among whom Herbert Spencer is *facile princeps*, have applied the doctrine of development to ethics, and shown how the very foundations of morality and religion are enshrined in the words, "For all the law is fulfilled in one word, even in this: Thou shalt love thy neighbour as thyself." Now, works exist in which cosmical physics are more or less popularly treated of. Such noble volumes as those of Lyell and Geikie enable the student to trace the history of the earth from the first formation of a continuous hard envelope on its surface down to the present instant. To say nothing of Darwin's own immortal "Origin of Species," writers like Romanes in "The Scientific Evidence of Organic Evolution," and Oscar Schmidt in his "Descent and Darwinism," have done much to popularise the theory of natural selection; while Herbert Spencer himself, the late Professor Clifford, the editor of this magazine, Miss Naden, and others, have equally succeeded in familiarising us with the essential principles underlying all real ethics. It has, however, been reserved for Mr. Clodd, in his latest work, to unite these seemingly discrete branches of the subject into one harmonious whole, and to tell sequently the story of the evolution of the visible universe, from its inception in a mass or masses of glowing vapour to the completion of the cosmos, as we know it, in all its appalling complexity. And surely this astounding history has never been told more popularly, perspicuously, and pleasantly than in the volume before us. In the very outset its author defines Force and Energy in terms which cannot but be helpful to the but too often puzzled student of dynamics, and gives an elementary exposition of the nature of matter which contains the pith of many more pretentious treatises. Then, after a rapid sketch of the earth as a planet, he proceeds to trace her past life history, and to tell the story of the appearance and development of organised beings upon her surface—from the awfully remote date of the first traces of fucoid and foraminiferal forms, through the mollusca, the strange and weird types of crustacea, fish and reptiles, the giant mammalia, the ape, the cave-man, and so to Shakespeare, Newton, and Darwin himself. This is followed by a dissertation on present Life-forms, in which embryology is invoked to show how each being in the course of its development from the ovum passes through all the stages which in its progenitors formed the final and permanent life-forms, and hence supplies, as it were, a pictorial history of its origin, or series of ancestral portraits. In all this the unity of Nature is most strikingly brought out. In the second part of his work our author treats of the mode of becoming and growth of the universe, and shows how it had its origin in the co-existence of matter and power. He then descants, in a most lucid style, on the origin of life and life-forms. In equally perspicuous fashion does he discuss the origin of species, explaining and enforcing the doctrine of its immortal discoverer. And this part of his work we would earnestly commend to those who conceive that they reply to the Darwinian argument by demanding to be shown the missing links between existing types and their progenitors. Cavillers of this kind may learn here how very shallow their objections really are. The volume concludes with an account of social evolution, including under that head the evolution of ethics and theology, of which part of Mr. Clodd's work it must suffice to say here that it will come as a revelation to a very large number of persons who are—or believe themselves to be—extremely religious. To any who have ever read Mr. Clodd's delightful "Childhood of Religions," or, in fact, who have acquaintance with any of his writings at all, it must seem almost an impertinence to insist on the charm of his style. Assuredly that charm is conspicuous enough in the work now before us. The volume is well and abundantly illustrated, but in connection with the frontispiece we must caution the non-astronomical reader that the wood-block has been turned on its side, and that to view its delineation of the wonderful nebula surrounding θ Orionis, as it is actually seen in the telescope, the engraving should be viewed with the title-page beneath it.

EVOLUTION OF LANGUAGE.

By Ada S. Ballin.

IX.—DEMONSTRATIVE AND PRONOMINAL ROOTS.

PROFESSOR MAX MÜLLER has distinguished two kinds of roots—the *predicative*, denoting either existences or actions, and the *demonstrative*, marking positions or localities of existences or actions. Thus, taking as a concrete example the root *eat*, which simply expresses an action, and the roots *here*, *there*, *yonder*, expressive of positions in which an action may take place, we can, using them in a Chinese fashion, get the sentences: Eating here = I eat; eating there = thou eatest; eating yonder = he eats, which would be expressed in gesture language by imitating the movements of mastication and pointing to oneself for "I eat," to one's interlocutor for "thou eatest," and to the person referred to for "he eats," or, in the case of the absence of that person, by making the sign used to represent him.

I have discussed as exhaustively as space permitted the first class of these roots described in a former article *—namely, those signifying action or quality, whence by far the greater number of words is derived—and I have shown the probable origin of these "units of speech." It is now time to consider the second and less important class, composed of roots which signify position. There are not more than a dozen of these roots, and some of them were probably derived from one original. From this class come the interrogatives, roots generally containing *k*, the demonstratives, containing *t* or *n*, the personal pronouns, possessives and relatives, with the adverbs of position and direction. It is very noticeable that suchlike words are not confined to any one family of languages.

It has been suggested, as Whitney says, not without some degree of plausibility, that the pronominal roots in Indo-European and other languages have a sort of physical *raison d'être*. *Ma*, our *me*, is produced by closed lips, as if shutting out the rest of the world, while the demonstrative *ta*, our *that*, is produced by the thrusting forward of the tongue in the mouth, as if to point at the object signified; and the same suggestion may be made with regard to Semitic pronouns, as *ani*, Hebrew and Arabic, "I"; *atta* or *ant*, "thou," which, as a final enclitic, becomes *ta*; *asher* or Arabic *hatha*, "that"; also Arabic *thalik*.

On some such theory may perhaps be explained the resemblance of Aryan and Semitic pronouns, as, for example, Hebrew *hoo*, Arabic *hooa*, "he"; Hebrew *hame* (pronounced like "lame"), Arabic *humma*, "them."

Our primitive fathers, like children and savages, did not distinguish between object and subject. The accusative of the first person historically preceded the nominative; hence *ma*, *mi* are attached to the first person of the verb, not *ego*, *aham*. The Sanskrit *aham*, according to Benfey, grew out of an older form, *maham*. The nominative plural in Lith. is *mes*, in O. Prus. *mes*, in O. Slav. *mu*, in Ossetic *mach*, in Lapp *mi*, in Pali *mayam*, and in Greek and Latin there are the verbal endings *men* and *mus*, as in *tuptomen*, *scribimus*. The change of *m* into *w* is by no means rare. A gentleman from German Switzerland told the late Professor Key that where he lived all the people said *mir* sagen in preference to *wir* sagen; and in the Lithuanian the nominative and accusative *ve-du* and *mu-du* coexist. The Sanskrit plural nominative is *vayam*, formerly doubtless *mayam*, as in Pali. The Zend is *vaêin*, and the Gothic *veis*. The interchange of the liquids *m* and *n* is very common. In Sanscrit in the oblique cases of the dual and plural, we find *nâu* and *nas*, in the Zend dual *nô* and *ne*, Greek dual *nôi*, Latin plural nominative *nos*. Although the Lapp language is not supposed to belong to the Indo-European family, its pronouns closely resemble them. Thus, according to Fiellström †:—

The Nom. is	*mon*, I	*todu*, thou	*soden*, he
„ Gen.	„ *mo*, of me	*to*, of thee	*so*, of him

From *parne*, son, comes *parnam*, my son; from *nipe*, knife, *niput*, thy knife; from *aija*, grandfather, *aijabs*, his grandfather. In a related language, Tcheremissian, we find ‡:—

ata-m,	my father	*ischtene-m*,	I do
ata-t,	thy „	*ischtene-t*	thou doest
ata-sha,	his „	*ischtene-she*,	he does
ata-na,	our „	*ischtene-ne*,	we do
ata-da,	your „	*ischtene-da*,	you do
ata-sht,	their „	*ischtene-sht*,	they do

Rask § gives the Lapp pronouns as follows:—

Nom.	*mon*, I	*don*, thou	*son*, he
Pl.	*mi*, we	*dí*, ye	*sí*, they
Gen.	*mò*, of me	*dú*, of thee	*sú*, of him

Vhael ‖ gives the Finn pronouns as:—

Nom.	*minä*, I	*sinä* or *tämä*, thou	*hän* or *se*, he
Pl.	*me*, we	*te*, ye or you	*he*, they
Gen.	*minun*, mine	*tämän*, thine	*hänen*, his

Out of a list of ninety negro languages, in more than seventy the pronouns of the first person consist of *ma*, *man*, *me*, *mi*, *mu*, *na*, *ne*, *ni*, *in*, or *m* and *n* as a prefix, and *m*, *n*, or *ng* is used in a similar way in Asia, Siberia, and America.

The plural of the first personal pronoun is naturally an extension of the singular, and whether we find it with an *n*, a *w*, or a *v*, we can easily trace its original form to the radical consonant *m*, with its idea of inwardness or subjectivity. Similarly with the second person in forms with *d*, *th*, *dh*, or *z*, we trace the original *t*—the thrusting forward of the tongue as in pointing to a person or object; and hence we find a close relationship existing between the second personal pronoun and the demonstrative. The Sanscrit neuter nominative *tat* = this. *This*, *that* in Arabic is *dha* and *dhu*; Hebrew, *zeh*. The Slavonic languages have demonstrative pronouns beginning with *t*, like the Greek τὸ, τοῦ; in Mongol *ere* this corresponds to *tere*, that, like our *here* and *there*, and *ouba* and *touba* = this and that. The Lapp demonstrative is *daat* or *dat*. The Sanscrit relative and interrogative is *ka-s*, with the *dhâtŭ*, *kinn*, Ionic κοῦ, κῆ, κότερος; *quwhat* and *quwhere* = our *what* and *where*. Our *which* is from a former *whiik*. In Portuguese we find *quem sabe?* "who knows?" Spanish *quien sabe?* Sardinian *chini*, interrogative and relative; Turkish *kîm* or *kim*, with a variety *kih*; while the Finnish has *cu-ca* (Lat. *quisque*) and *ken-kä* as interrogatives, *cuin* as a relative, and *cu-mpsi* as the equivalent of the Latin *uter* (formerly *cuter*). Old Slav. has the forms *chĭso* or *chĕso* for interrogation, and Mongolian *ken?* who, which. One form of the interrogative in Lapp is *gi*, "who?" gen. *geen*, "whose?" *g* superseding the Finnish *k*. In Chinese interrogative adverbs the *k* sound predominates—*kì-tō*, "how much?" *kì-tá*, "how great?" *kì-shî*, "at what time?" "when?" *siên-kí-niên*, "how many years ago?" *k'î* at the beginning of a sentence is interrogative (*quomodo*), and in Chinese literature *kŭ*, *hô*, and *yên* are used as interrogatives. The striking resemblances of distinct families of speech with regard to

* Vol. ix. p. 286.

† Gram., p. 32. ‡ *Ibid.*, pp. 20, 21.
§ Rask's Gr., p. 79. ‖ P. 41.

XUM

the interrogative *k* would lead us to assume a physical reason for its use; but with regard to this I can only hazard a conjecture that just as the voice is raised in interrogation, so the tip of the tongue thrust forward for the demonstrative dental *t* rises in sympathy with the voice for the palatal *k* of interrogation. *T* and *k*, it will be remembered, are frequently interchanged. With regard to the affirmative particle I hardly dare even venture a guess; but I would suggest that when, in the gesture of affirmation—the forward nod—the teeth are closed, the expulsion of the air through them which sometimes takes place in the sudden nod would give rise to a hissing sound *s* or *shi*, while if the mouth is partially opened an *i* or *yi* sound would result. Some such cause must be at the root of the resemblances in the affirmative particle which we find in so many languages of different families. For example, it is noteworthy that *shí*, *jên*, and *yiù* express acquiescence "yes" in Chinese, and may be compared, at any rate as far as sound goes, with our *yes*; German *ja*. In Arabic *iy* answers to our *yes* or *yea* when followed by an oath.

Although the origin of the affirmative particle is not satisfactorily discovered, that of the negative is quite clear. When the infant is not hungry, or does not wish to take anything into its mouth, it moves its head from side to side to avoid the object offered, at the same time closing its lips tightly, and when the voice is exerted through the closed lips the sound *m* or *n* is given out.* This accounts for the widespread use of these sounds to express the negative, as in the Greek *mê*, Latin *ne*, whence *nego*, French *nier*, Illyrian *nekati*, On. *neita*, *nita*, to say *ne*, "deny, refuse." It will be remembered that the expression of the negative is usually accompanied by a lateral shake of the head.

The simplest form of the negative in Latin and Teutonic languages is *ne*, whence *non* from *ne-unum*, old form *nenu*, in the same way as our *none* from *ne one* or *no one*, German *nein* from *ne-ein*, and later English *no*. From it the Romans got the compounds *ne-quis*, *ne-cuter* (*neuter*), *n'ullus*, the substantive *ne-mon-*, German, *nie-mand*, the adverbs *n'unquam*, *n'usquam*, and the verbs *ne-queo*, *ne-scio*, *ne-uolo*, afterwards *nolo*. In Anglo-Saxon we have *nis*, "is not," *nás*, "was not," *ic nát*, "I wot not," *ic nah*, "I own not," with *ic nah*, "I own;" *ic nabbe*, "I have not," *ic nelle*, "I will not," with a perfect *nolde*, similar to our expression *willy-nilly*, "whether he will or no." Jamieson gives the old Scotch *nam*, "am not," *nar*, "were not," *nat*, "wot not," as well as *nold*. The very word *not* itself is a similar compound of Gothic *ni-vaiht*, Anglo-Saxon *nawiht*, German *nicht*, and our *naught*. Chaucer says, "They knew him *naught*." Old Scotch has *noct*, R. Brunne *noght*, and Robert of Gloucester *nogt*. Lat. *non* is reduplicative, and has a stronger sense than *ne*, as in the repetitive French expressions *ne . . . pas*, *ne . . . point*, *ne . . . rien*. *Ma* is one of the forms of the negative in Semitic languages; in Hebrew it is used as an interrogative, and in Arabic as the negative of the definite or absolute present, and of the perfect *not*. In Arabic there is also an interrogative form, *amā* (used in the same way as the Latin *nonne*), with dialectic varieties, *ama*, *hamā*, *hama*, &c.; in Hebrew there is also a form with the interrogative *he*, followed by *im*. Another form of the negative is *la* in Arabic, *lō* and *al* in Hebrew, probably a derivative from the older *m* form. Both are combined in the Arabic *lam*, negative of the perfect *lamma*, "not yet"; Heb. *lamma*, "why?"

In oaths the Hebrew *im* is a negative particle, but it commonly means *if*. Probably the original meaning of *im* was "is it not?" *Ain* in Hebrew = *no*thing, or *not*; as in *ain lee*, I have not, is also used in an interrogative sense, "where," Arab. *ayin*. Indeed, in most languages the negative readily passes into the interrogative, as, "Is it not so?" In Chinese the negative adverbs are: *mŭ*, "to be without"=*no* or *not*, the opposite of *yiù*, "to have"="yes there is"; *pŭ*, *not*, the most common negative, which has no other use; *fi*, "not to be—false," it is not opposed to *shí*, "to be"="yes it is"; *wŭ*, "not to have"="without"=*mŭ-yiù*, also much used (the Canton dialect expresses the negative of possession by *mò*); *mŏ*, "not, do not," a synonym of *pŭ*, "not," and *m* in the Canton dialect, which is the equivalent of the *mŏ* and *pŭ* of the books.

Here *pŭ* and *fi* have doubtless their origin in the *pooh*, *faugh* sound with which we reject a nauseous morsel, and similarly an unpleasant proposition, while the *w* in *wû* is most likely the phonetic representative of the earlier form with *m*. With regard to the interrogative use of the negative as in Aryan and Semitic languages, in Chinese *mò* is a final interrogative in the Mandarin, and *nī* in the Canton dialect. In Chinese, as in several other languages, two negatives make an affirmative: thus, *mŏ-fī*, in *ngŏ mŏ-fī shwo-hwang pŭ ch'îng*, "I surely do not lie at all," and *wû-fī*, and *fī* with *pŭ* are similarly used, as *fī t'ā pŭ k'ò*, "cannot do without him." *Wû* is sometimes used as a prohibitive "Do not!" and so also is *mŏ* when it stands alone.

* See "Thought and Language," x, Knowledge, vol. vii., pp. 474-475.

Reviews.

Astronomy for Amateurs. Edited by John A. Westwood Oliver. With the Assistance of T. W. Backhouse, F.R.A.S.; S. W. Burnham, M.A., F.R.A.S.; J. Rand Capron, F.R.A.S.; W. F. Denning, F.R.A.S.; T. Gwyn Elger, F.R.A.S.; W. S. Franks, F.R.A.S.; J. E. Gore, M.R.I.A., F.R.A.S.; Sir Howard Grubb, F.R.S., F.R.A.S.; E. W. Maunder, F.R.A.S.; and others. (London: Longmans, Green, & Co. 1888.)—Mr. Westwood Oliver and his very able staff of coadjutors have produced a work of enduring value to the astronomical student in the volume before us, of which it is not too much to say that it should be carefully studied by every incipient observer who hopes or wishes to do any work whatever of scientific value. For it is especially with such work, as contradistinguished from mere desultory stargazing, that this capital little book concerns itself; and, no matter to what special branch of astronomy the beginner proposes to devote his energies, he will here find explicit directions, from a master hand, for the most successful method of prosecuting his studies, and enriching science by the results of his personal labour. After a preliminary discourse on the leading divisions of astronomical research by the editor, we have a thoroughly practical chapter on the telescope and observatory by Sir Howard Grubb. Then Mr. Maunder follows with an equally practical one on solar observation; while it is only necessary to mention Mr. Elger's name as the author of the chapter on the moon to indicate its value and excellence—a remark which we may equally extend to Mr. Denning's dissertations on the planets and on meteors. The last-named gentleman also contributes a chapter on comet-seeking. The subject of double stars is admirably treated by him who is *facile princeps* as their observer and discoverer—we mean, of course, Mr. S. W. Burnham; while equal justice is done to that of variable stars by Mr. Gore. Mr. Backhouse and Mr. Baird Gemmill treat jointly on stellar distribution; a chapter on the zodiacal light being founded on contributions by the gentleman first named and Mr. Arthur Searle. The work concludes with

a short account of the methods of observing the (questionably astronomical) phenomenon of the aurora by Mr. J. Rand Capron. We think that our mere *précis* of the contents of the volume whose title heads this notice will practically suffice to justify the terms of commendation in which it commences. Certainly no more useful work to the beginner has yet appeared. A very careful perusal of it has failed to reveal more than three obvious errata. The first occurs on page 129, where it is alleged that "the solar parallax . . . is now adopted at 8·78″," which is certainly not the case. The parallax adopted in this country is 8·848″, while the Belgian results make it greater still. At the time we write the American ones have not been made public. Perhaps the author was thinking of Dr. Gill's Mauritius results, which are—Dr. Gill's and nobody else's; and of which he himself says ("Dunecht Observatory Publications," vol. ii. p. 212), "We do not attach very much importance to the value of the parallax deduced." The second mistake appears on page 130, where it is alleged of Venus, in and close to inferior conjunction, that "the interior region of the disc is seen perceptibly lighter than the dark background of the sky on which it is projected." Practical observers of repute have seen it *darker* than the light background of the sky on numerous occasions, so that the statement as it stands is far too unqualified. The third error we have noted is in the engraving of the "Aurora theodolite" on page 314, where that instrument is represented with an object-glass which has, in reality, no existence.

Capital: a Critical Analysis of Capitalist Production. By KARL MARX. Translated by SAMUEL MOORE and EDWARD AVELING, and edited by FREDERICK ENGELS. (London: Swan Sonnenschein, Lowrey & Co. 1887.)—The common-sense reader, unfamiliar with the rudiments of political economy, will rise from the perusal of this combination of virulent declamation and pseudo-scientific exposition with a feeling akin to that experienced by the incipient logician when he makes his first acquaintance with the old puzzle of Achilles and the Tortoise. He will find a good deal that appears to him at first sight inexpugnable in the shape of sequent argument; but underlying which he feels intuitively there is some stupendous fallacy. It is only upon re-reading Herr Marx's two volumes that he will thoroughly realise how the dominant motive of their author is an almost insane class-hatred; and how, in his endeavour to gratify it, he is absolutely indifferent whether he is dealing with fact or fiction. An extract taken absolutely at random will illustrate this. It is one that strikes our eye as we write, and occurs in the form of a footnote on page 250, which begins thus, "In England even now occasionally in rural districts a labourer is condemned to imprisonment for desecrating the Sabbath, by working in his front garden." If Herr Marx does not know this to be absolutely false, his translators and editor do, and the mere retention of such an allegation in its pages shows the animus with which the work is written. It is quite true that, on rare occasions, that pest the "common informer," has summoned a tradesman under the very discreditable, but practically obsolete, Act 29 Car. II., c. 7, for doing "work of his ordinary calling upon the Lord's Day," and has obtained a conviction; but this is a very different thing to that alleged by the author of the work before us. A labourer working in his own front garden is not "following his ordinary calling," and the statute does not apply to him in any way. The whole book is one sustained tirade against the middle-class capitalist. The mere sight of the word "bourgeois," or the idea of the social condition it implies, appears to exercise an influence on Herr Marx compared with which that of a red rag on a bull may be regarded as sedative and tranquillising. The perusal of a work like this to any one who has studied such masterly and scholarly expositions of economic science as those of Mr. Dunning McLeod, is like reading an essay by a boy in the Fourth Standard at a Board School, by anyone familiar with the undying work of Addison and Steele.

Manual of the Sextant. By CHARLES W. THOMPSON, F.R.G.S. (London: John Bumpus. 1887.)—Mr. Thompson's excellent manual of the sextant may be confidently recommended to all travellers and explorers whose outfit of instruments is confined to the one of which it treats, together with an artificial horizon and a chronometer. The optical principles on which its action depends are clearly explained, and this explanation is followed by a detailed description of the construction and use of the sextant as at present framed by our leading makers. Then the beginner is instructed how to use the instrument in observing altitudes and angular distances, and the methods of employing it to determine latitude, time, longitude, and the variation of the compass, and to set out a meridian line, are taught in a manner so simple, that no moderately attentive reader can possibly fail to thoroughly grasp the modes of obtaining the results sought. Wisely eschewing formulæ, our author works out numerical examples of the various processes at full length; and, at the end of his book, furnishes all the tables necessary for the reduction of the observations made. When Mr. Thompson's volume runs into its inevitable second edition, we should recommend him to obtain and describe one of the remarkably ingenious prismatic sextants made by Pistor and Martins, the opticians in Berlin. These instruments measure angles up to 180°. And we may add in conclusion, the expression of our surprise that in a book in other respects so complete, no mention whatever is made of the method of determining the excentricity of the sextant—a matter of vital importance, if it is to be employed for refined work.

The Brassfounder's Manual. By WALTER GRAHAM. Seventh Edition. (London: Crosby Lockwood, & Son, 1887.)—When a book on a purely technical subject has run into its seventh edition, it may fairly be assumed to have criticised itself, and to have established its own claim to excellence. Assuredly in the present case the success achieved has been well deserved, for a more complete little manual than Mr. Graham's we have rarely come across. Invaluable to the commercial brassfounder, it will be found replete with information of use to the amateur who tries his hand at the construction or repair of optical and other scientific instruments. The workman who buys this little volume may further derive very great benefit, outside and beyond that of a merely technical character, by the careful perusal of pages 20 and 21.

The Eskimo Tribes. By Dr. HENRY RINK. (Williams & Norgate.)—The principal object of the present work, the eleventh of a series on Danish investigations in Greenland, published at the cost of the State, and which its learned author has made more accessible by an English version, is to furnish an idea of the elements of the little-known Eskimo language. But for us the main interest lies in the earlier chapters, which discuss the mode of life, dwellings, religious and social arrangements of the Eskimo tribes, and especially in the first chapter, in which Dr. Rink, while expressing no decided opinion, collates the evidence which tends to confirm the theory that they migrated from the interior of Alaska, dispersing northwards until their final settlement in Labrador and Greenland. The subject is of importance as a contribution to the movements of races in prehistoric times, and to the general question of man's origin in, and migration from, northerly hemispheres. As our readers

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may remember, Professor Boyd Dawkins inclines to the theory that the Eskimo are the descendants of the men of the reindeer period, who retreated in a north-westerly direction, a theory based upon certain physical similarities and upon like customs. But this short notice is not the place for its discussion, and, moreover, we hope to return to the subject at a future time. Students of folk-lore and traditions are familiar with Dr. Rink's volume of Eskimo tales, and he has placed them further in his debt by the publication of the present treatise.

Tenants of an Old Farm: Leaves from the Note-book of a Naturalist. By Henry McCook, D.D. With an Introduction by Sir John Lubbock. (Hodder & Stoughton.)—No compliment is paid to science by dressing up its facts in the guise of fiction, and the wonders of insects, especially ant-life, which are the subjects of this book, stand least of all in need of the story-teller's artifice to enhance interest in truths which are "stranger than fiction." As Dr. McCook has, however, with some hesitation as he tells us, chosen to season natural history with romantic admixture, we must be thankful that the work has fallen into hands as competent as his. The book is written in an attractive and animated style, and is amply illustrated with accurate, and often fantastic, woodcuts.

Our Whist Column.

By "Five of Clubs."

A SAMPLE OF LAST CENTURY'S WHIST.

THE *Australasian* publishes an interesting illustration of the whist of a century ago. It remarks that "in 1871 Mr. Hugh Lennon presented to the Melbourne Public Library a poem in heroic metre which was published anonymously in London in 1791. This bears the title of "Whist, a Poem in Twelve Cantos." The author "thought proper to assume the character of a vain, petulant stripling, whose opinion of his own wit and abilities is so overweening that he thinks they entitle him to fall foul of everything that comes in his way." In his poem he not only embodies the accepted canons of the long whist of a century ago, but also discusses the requisites of a good player. Of these he signifies three in particular:—(1) Memory, (2) judgment, (3) temper. To the tenth canto he prefixes the following argument:—"Temper, the third requisite at whist. Three causes of loss of temper. (1) Bad luck, (2) cross play, (3) a bad partner. Cards a terrible trial for the temper. Story of Smilinda and her lover Pusillo." This story is in brief that "Pusillo" was very much in love with "Smilinda." Being a very cautious "bird," however, he thought it best to make "one nice experiment" before demanding the lady's hand, whereby

> He might the certain knowledge gain,
> If she her temper could at cards retain.

The opportunity presents itself when Pusillo and Smilinda are partners at whist against "cousin Booby's son, a country squire," and "Aunt Rebecca." Pusillo begins by making some deliberate mistakes which are of no great consequence. Smilinda is fuming inwardly, but her eyes continue "to retain their placid charm." At length, in a close struggle for an all-important odd trick, Pusillo commits a gross blunder, and throws away the game. Thereupon

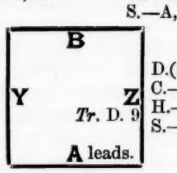
> The gentle creature could endure no more,
> She started up, she stamped, she raged, she swore,
> Proclaimed her wrongs, and threw the cards away,
> Nor longer in his presence deigned to stay.
> . . . . . .
> And thus that flame, which had for years endured,
> In one short minute was entirely cured.

In the text the author describes the play of the hand in a general way; in an appendix he gives in detail the cards which fall to the several successive tricks. The result is the earliest example of an "illustrative whist hand" with which we are acquainted. Moreover, the hand is fairly well played throughout, except just at the point where Pusillo deliberately throws away the chance of winning the odd trick."

THE HANDS.

B { D. (*trumps*).—8, 5. H.—A, Q, 7. / C.—Q, 7, 5. S.—A, Kn, 10, 9, 6. }

Y { D. (*tps*).—K, 6, 4. C.—A, Kn, 10, 3. H.—K, 9, 8, 6. S.—8, 4. }

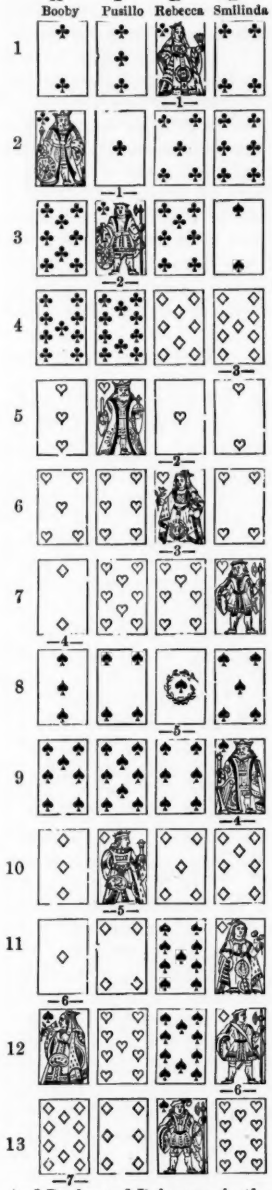


{ D. (*tps*). -Q, Kn, 9, 7. C.—6, 4. H.—Kn, 10, 4, 2. S.—K, 5, 2. } *Z*

A { D. (*trumps*).—A, 10, 3, 2. H.—5, 3. / C.—K, 9, 8, 2. S.—Q, 7, 3. }

Score (apparently):—Booby and Rebecca, nine; Pusillo and Smilinda, seven.

Card underlined wins trick; card underneath leads next.



And Booby and Rebecca win the odd trick against two by honours.

NOTES ON THE PLAY.

Trick 1.—Booby leads correctly from his numerically strong suit.

Trick 2.—But in preference to returning the club Rebecca ought to have led either her spade ace or her diamond eight. Also, if the club was to be returned at all, the seven ought to have led, not the five.

Trick 3.—Smilinda properly discards the spade two.

Trick 5.—Smilinda—

> "Now with careful eye her hand surveys,
> And from the knave a heart unwilling plays;
> A vile, unlucky lead in every view—
> (And yet what better could the virgin do?
> Her king of spades but once defended lay,
> And could not to the ace be left a prey;
> Her trumps, the last resort, were now too few,
> Since one from four her former triumph drew).
> A vile, unlucky lead; for full command
> Lay couched in ambush in Rebecca's hand."

Trick 6—

> "And now Rebecca's queen a trick to gain
> Had sanguine hopes; nor did she hope in vain.
> The lead should ne'er be changed without a cause,
> So from her hand another heart she draws."

Trick 7.—Of course Smilinda ought to have played the heart ten.

Trick 10—

> "But now the nymph no longer would delay,
> Though rather weak, her suit of trumps to play."

Trick 11.—Here, again, Smilinda plays the higher, instead of the lower, of two sequence cards.

Trick 12.—Pusillo makes a gross blunder—

> "(For) had he so inclined, his chance was sure,
> This trick to conquer, and the game secure;
> . . . . . .
> But thoughts of different hue his mind engross;
> His am'rous heart contemns the rubber's loss;
> With wilful error slips the trump to play,
> And throws at one rash stroke their all away."

Our Chess Column.

By "Mephisto."

THE following game will be found interesting, as it records a somewhat novel defence to the Bishop's Gambit. It has always been our belief that the play in this interesting opening has been far from exhausted, either for the attack or the defence.

One of fourteen games played simultaneously by Captain Mackenzie against Mr. J. D. Seguin — a strong player — at New Orleans, January 23, 1888:—

Bishop's Gambit.

White. Mackenzie.	Black. Seguin.	White. Mackenzie.	Black. Seguin.
1. P to K4	P to K4	13. P to Q5	B × QKt
2. P to KB4	P × P	14. P × B	P × QP
3. B to B4	P to Q4	15. P × QP	Kt to B3
4. B × P	Q to R5 (ch)	16. P to B4	QR to Ksq (*g*)
5. K to Bsq	P to QB3 (*a*)	17. Q to Q3	Kt to K5 ! (*h*)
6. B to B4 (*b*)	B to KKt5	18. B to Kt2 (*i*)	Kt to Kt6 (ch)
7. KKt to B3 (*c*)	Q to R4	19. K to B2	R to K6 !
8. P to Q4	P to KKt4	20. Q to Q4	Kt × R (ch)
9. Kt to B3	Kt to Q2	21. R × Kt	P to B3 (*j*)
10. P to KR4 (*d*)	Castles	22. Q × P(B3) (*k*)	KR to K sq
11. Q to K2 (*e*)	Kt to Kt3	23. Kt to K5	Kt to Q2 ! (*l*)
12. B to Kt3	B to Kt2 (*f*)	24. Q × KtP	Kt × Kt

And Black won.

(*a*) The object of this move is to facilitate rapid castling on the Queen's side. We have seen many fine games played in this opening where this has been done. White will subsequently be compelled to play P to Q4 to develop his game, and prevent the Black KB harassing the White K by playing to B4. Under these conditions, Black by castling QR besides bringing his K into safety for a time, brings his Rook to Qsq, thereby establishing a kind of masked battery on the Queen, which the latter is usually compelled to avoid by moving on the King's file. Black will then direct his play on the Queen's Pawn, and, under certain circumstances—for instance, to be able to play R to Q8 (ch), and for other combinative purposes—Black may sacrifice a piece effectively. These are some features of the game if Black castles QR, but if he fails to do so, then P to B3 becomes a loss of time, as Black will probably have to play P to KKt4 to defend his KBP, which would give White two squares, namely Q6 and KB6, where he threatens to place his Queen's Knight, which often succeeds when the defence is indifferently conducted, resulting sometimes in the loss of the Black Queen; this is brought about by a series of moves whereof the following are the essential ones, namely QKt to B3, P to Q4, P to K5, Kt to K4, &c. Then, again, we have often observed that the Black P on B3 makes an ultimate advance of the White Q's P—if properly supported by the Kt on QB3—all the more effective, for if then Black takes, White, amongst other things which he might do, may retake with his Knight, which then would occupy a strong and menacing position on Q5; in the alternative of Black not taking the P on Q5, it leaves White the option of weakening Black's Q's side by playing P × P, or playing P to Q6, &c., if worth while. These are the main outlines of this attack, and it may be said that he who develops most rapidly will obtain an advantage; but whether the defence adopted in the text is good, experience alone must decide.

(*b*) We should prefer B to Kt3.

(*c*) Here it may be observed that Q to Ksq might come in useful, for if Black changes Queens, then—the fact of the White B on B4 threatening the Black KBP preventing Black for the moment from castling QR; the position of Black's Pawns on the King's side rendering an attack on them profitable; the superior position of White's Pawns on the Queen's side; the fact of the Black P on B3 preventing him from playing his QKt to B3—all these, in themselves very small items, would, combined, render White's game more desirable. If Black does not change Queens, then the move of the Queen will come into effect later on, after Black has castled QR, by avoiding the "masked battery."

(*d*) P to Q5 would not do now, because Black would reply with Kt to K4; but it will be seen (in illustration of our note *a*) that under circumstances (for instance when the White KKt is not doubly pinned, or the White B had retired to Kt3) this may be a strong move. In illustration of another point touched upon in our note *a*, 10. P to K5, with the intention of playing Kt to K4, is now also inadmissible, because then Black castles, threatening Kt × KP; and if White, in order to forestall this move, continues with 11. Q to K2 (to avoid the masked battery, the necessity of doing which we mentioned in note *c*), then Black, by playing Kt to Kt3, attacking the B (which, according to note *b*, ought to have been played to Kt3), will win the QP.

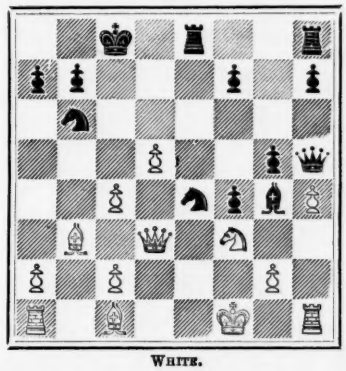
(*e*) The *Times Democrat*, New Orleans, here points out that if White plays 11. K to Ktsq instead, then Black has at his disposal the ingenious continuation B to Kt2, for if then 12. P × P, B × Kt ! and Black would win the QP with a good game.

(*f*) If Black plays R × P, White would reply 13. Q to B2, compelling the Rook to move, after which 15. Kt × P would gain some advantage.

(*g*) Why not the King's Rook ?

(*h*) Black has developed his pieces rapidly and with precision. The advance of the QP has, under the circumstances, turned out dangerous for White. Black has now a winning game.

Black.



White.

(*i*) It would be but a very poor expedient to try and avoid the loss of the exchange; for instance, by 18. K to Ktsq, Kt to Kt6; 19. R to R2, B × Kt; 20. P × B (best, for if 20. Q × B, Black mates in two moves); 21. R to K8(ch) and wins.

(*j*) Under the circumstances this move does no harm.

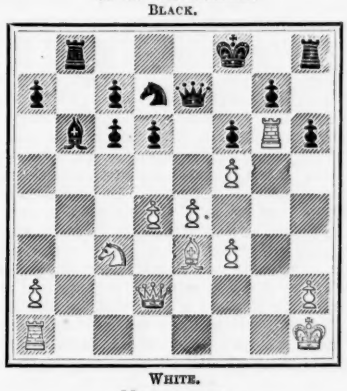
(*k*) We should have preferred to utilise the time given by Black's last move to play 22. Q to B4(ch), K to Ktsq; 23. Kt to Q4.

(*l*) A winning move. White cannot take the Kt on account of mate threatened by R to B7(ch), &c.

Position after Black's 20th move in a game, being one of sixteen games played simultaneously by Captain Mackenzie at New Orleans on January 25:—

J. G. Blanchard.

Black.



White.

Mackenzie.

The game continued—

21.	QR to KKtsq	R to R2
22.	B × P !	

Fine play, and apparently quite sound.

22.		P × B

If R × B, White would have the ingenious reply of 23. Q × R, as the P could not retake, for that would be mate in two moves. But now White misses a chance of speedily determining the game. Instead of 23. Q × P (ch) he ought to have played 23. R to Kt8 (ch), K to B2 then 24. Q × P would win a Rook, as Black has no better reply to this threatening move than R × R.

23.	Q × P (ch.) !	K to Ksq
24.	R to Kt8 (ch)	Kt to Bsq
25.	R × Kt (ch)	

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All this is highly interesting play; if now Q × R White plays Q × R—

25. K to Q2
26. Q × R

This move is now forced—

26. Q × Q
27. R × R K to K2

Thus Black misses a chance by not playing the obvious move of B × P. If, then, 28. R (Ktsq) to Kt8, Black plays P to B4, and there is no danger. Black subsequently missed some further chances of playing for a draw, and the game concluded in the following curious way:—

WHITE.	BLACK.	WHITE.	BLACK.
28. Kt to K2	P to B4 ?	41. R to K4 (ch)	K to Q8
29. Kt to B4 !	P to Q4	42. R to Ktsq(ch)	K to Q7
30. Kt × P (ch)	K to Q3	43. R(Q4) to KKt4	P to B5
31. Kt × KBP	Q to R6	44. Kt to K4 (ch)	K to Q6
32. P to K5 (ch)	K to R3	45. R to Qsq (ch)	K to B7
33. P to Q5 (ch)	K to Kt4	46. R to Q2 (ch)	K to B8
34. R to Ktsq (ch)	K to B5 ?	47. P to KR3 !	Q × P ?
35 R to Kt8	Q × BP (ch)	48. R to K2	P to B6 ?
36. R to Kt2	Q × BP	49. R (Kt4) to Kt2!	K to Q8
37. R to KKt4(ch)	K to Q6	50. Kt to B2 (ch) !	B × Kt
38. R to QKt3(ch)	K to B7	51. R × Q	P to B7
39. R to B4 (ch)	K to Q8	52. R × B	Resigns
40. R to KKt3	K to K7		

THE FACE OF THE SKY FOR MARCH.

By F.R.A.S.

SPOTS appear at very infrequent intervals on the sun's disc, but watch should always be kept for them whenever an opportunity offers. At 4 o'clock in the early morning of March 20 the sun is said in the almanacs to "enter Aries." Reference to plate xvi. of "The Seasons Pictured" will show that he is at this instant in the Constellation Pisces. Spring begins, and this is the theoretical date of the Equinox, which actually happens in London a day or two sooner. The Zodiacal light is now visible on every clear evening over that part of the horizon beneath which the sun has set. The night sky is depicted in map iii. of "The Stars in their Seasons." Minima of Algol ("The Stars in their Seasons," map xii.) occur 1 minute after midnight on the 3rd; at 8h. 50m. P.M. on the 6th; at 1h. 44m. A.M. on the 24th; at 10h. 33m. P.M. on the 26th; and at 7h. 21m. P.M. on the 29th; and at other hours inconvenient to the observer. After the first two or three days Mercury becomes a morning star, but is not in a good position. He attains his greatest elongation west of the sun (27° 47′) at 1 o'clock in the morning of the 31st, but at this date he rises but a very little before the sun. Venus is a morning star too, and is but poorly placed for observation and wonderfully shorn of her glory. Mars may be seen by midnight in Virgo ("The Stars in their Seasons," map v.); a very moderate telescope will now show detail on his surface. Jupiter will scarcely be fairly visible until next month. He is situated about twelve diameters of the sun or moon to the NW. of Antares ("The Stars in their Seasons," map vii.). Saturn may be seen all night long, and is, as ever, an all-repaying object in the telescope. He lies to the west of the Præsepe in Cancer ("The Stars in their Seasons," map iii.). Uranus may be very fairly well seen before midnight now, and will be found not far from θ Virginis ("The Stars in their Seasons," map v.), somewhat to the south and west of that star. With a sufficiently high power his planetary disc at once distinguishes him from the surrounding stars. Neptune is rather less than 6° south of the Pleiades ("The Stars in their Seasons," map i.), but he is getting rapidly into the sun's rays now. The moon enters her last quarter at 3h. 26·1m. A.M. on the 5th, and is new at 4h. 21m. in the afternoon of the 12th. She enters her first quarter at 8h. 43·4m. P.M. on the 20th, and is full at 10h. 7·4m. on the night of the 27th. Six occultations of stars by the moon will occur at fairly convenient hours during the present month. Before she rises on the 3rd she will have occulted 49 Libræ, a star of the 5½th magnitude with her bright limb. Later on it may be seen to reappear at her dark limb half-an-hour after midnight at an angle of 274° from her vertex. On the 18th B.A.C. 1351 of the 6⅔th magnitude will disappear at the dark limb at 6h. 42m. P.M. at a vertical angle of 162°: reappearing at the bright limb at 7h. 49m. P.M. at an angle of 287° from the moon's vertex. On the 20th χ^3 Orionis, a 6th magnitude star, will disappear at the dark limb at 5h. 11m. P.M. at an angle of 70° from the vertex of the moon. Its reappearance at the bright limb happens at 6h. 32m. P.M. at a vertical angle of 297°. On the 20th 68 Orionis, a 6th magnitude star, disappears at the moon's dark limb at 10h. 21m. P.M. at an angle of 136° from her vertex: to reappear at her bright limb at 11h. 25m. P.M. at a vertical angle of 302°. On the 22nd B.A.C. 2683, of the 6th magnitude, disappears at the dark limb 23m. after midnight at a vertical angle of 154°. It will reappear at 1h. 13m. the next morning at the bright limb of the moon at an angle of 264° from her vertex. Lastly, on the 28th, yet another 6th magnitude star, 80 Virginis, will disappear at 7h. 49m. P.M. at the moon's bright limb, at an angle from her vertex of 10°. Its reappearance at the dark limb will happen at 8h. 43m. P.M. at a vertical angle of 230°. We exclude the occultation of η Libræ on the 31st, as disappearance does not happen until between 1h. and 2h. A.M., which hour extends beyond those within which we limit the prediction of these phenomena in this column. When these notes begin the moon is in Virgo, which constellation she quits for Libra at 9h. 30m. A.M. on the 2nd ("The Seasons Pictured," plate xxxii.). Having traversed Libra, she arrives at 2h. A.M. on the 4th at the western edge of the narrow northern spike of Scorpio, across which she has passed by 11 o'clock the same morning and entered Ophiuchus. She remains in Ophiuchus until 1h. 30m. A.M. on the 6th, when she enters Sagittarius. Her journey through the last-named constellation finishes at 10h. A.M. on the 8th, when she quits it for Capricornus ("The Seasons Pictured," plate xxi.), through which she is travelling until 10h. 30m. A.M. on the 10th. Then she crosses into Aquarius, her passage over that constellation occupying until noon on the 12th, at which hour she leaves Aquarius for Pisces ("The Seasons Pictured," plate xxii.). In the course of her journey through Pisces, she arrives at 9h. A.M. on the 13th on the confines of Cetus, through which she travels until 5h. P.M. on the 14th, when she comes out again into Pisces, only, however, to re-enter Cetus at 5h. P.M. on the 15th. When finally she quits Cetus, 30m. after noon on the 16th, it is to emerge in Aries ("The Seasons Pictured," plate xxiii.). Just 24 hours later, *i.e.* at 0h. 30m. P.M. on the 17th, she leaves Aries for Taurus. In the course of her journey through Taurus, she arrives at noon on the 20th on the western edge of the northernmost prolongation of Orion. By midnight she has crossed this and emerged in Gemini. At 9h. P.M. on the 22nd, she leaves Gemini for Cancer ("The Seasons Pictured," plate xxiv.), as she does Cancer in turn for Leo at 9h. 30m. A.M. on the 24th. Her passage through Leo finishes at 9h. P.M. on the 26th, at which hour she quits it for Virgo ("The Seasons Pictured," plate xxv.). She is travelling through Virgo until 7h. P.M. on the 29th, when she once more leaves that constellation for Libra ("The Seasons Pictured," plate xxvi.). Journeying over Libra, as at the beginning of the month, she arrives at the northern spike of Scorpio at 9h. 30m. A.M. on the 30th, her passage through which is complete by 6h. 30m. P.M., when she comes out in Ophiuchus. She is still in Ophiuchus at midnight on the 31st.

STRANGE FORM OF HYDROPHOBIA.—A few weeks ago Frank Tribbey, jun., a married son of Frank Tribbey, sen., proprietor of the Occidental Hotel, New Albany, Ind., was taken with a mysterious malady that baffled the skill of the physicians. He had every symptom of hydrophobia, and was so violent that the physicians were compelled to strap him down in bed. The physicians finally pronounced the case spinal meningitis. Tribbey after several days recovered, and was about the street until last evening. During last night he was again seized with a recurrence of the same symptoms. He barked like a dog, and became so violent that his friends were compelled to strap him down. Tribbey is said to be in a critical condition. Eight years ago he was bitten by a dog. It may be that some virus was left in the system from the bite.—*Cincinnati Inquirer.*

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